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The Oil Man's Calendar

MAR.	
15-17	Society of Exploration Geophysicists, New Orleans.
16-18	American Association of Petroleum Geologists, New Orleans.
21-25	Western Metal Congress, Biltmore Hotel, Los Angeles.
23-25	American Society of Mechanical Engineers, Los Angeles, Calif.
24-25	Southwestern District, A.P.I., Spring Meeting, Fort Worth, Texas.
APR.	
13-15	Petroleum Industry Electrical Association, Rice Hotel, Houston.
13-15	National Petroleum Association, Cleveland, Ohio.
14-15	A.P.I., Eastern District, Division of Production, William Penn Hotel, Pittsburgh, Pennsylvania.
19	A.P.I., Division of Production, Pacific Coast District, Spring Meeting, Biltmore Hotel, Los Angeles.
19	Western Petroleum Refiners Association, Hot Springs, Arkansas.
MAY	
6-12	American Gas Association, Natural Gas Department, New Orleans, La.
11-13	Natural Gasoline Association of America, Hotel Tulsa, Tulsa.
12-14	National Oil Scouts Association of America, Tulsa, Oklahoma.
14-21	International Petroleum Exposition, Tulsa, Oklahoma.
23-25	A.P.I., Mid-Year Meeting Wichita, Kansas.

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LOOKING AHEAD

WITH THE EDITOR

How to Shoot Oil Wells . . .
Seismic Geophysical Work Explained . . .
Tank Erection and Maintenance .

"MY counsel to you above all things is: No matter what size the shot, no matter what the condition of the pay, or how deep the well, you get the best possible results from your investment in oil well shooting if you properly confine it by proper tamping," says Paul F. Lewis, who holds forth in an early issue in an article, "The How and Why of Oil Well Shooting." What's more, he tells you how to properly confine a shot and just what constitutes proper tamping. If you're a shootin' man, it behooves you to lend an ear, whether you pull the trigger yourself or hire a gunnie.

"A FOOL there was, and he made his prayer, even as you and I," said Kipling, and he might well have added: "to understand what the hybrid offspring of old man Geology and old lady Physics means when he gets to talking about gammas and isograms and the like." But Kurt Steimann, our cub lassoed from the ranks of manufacturers of geological instruments, gives in an early issue of The Oil Weekly a "Pictorial Story of Seismic Reflection Shooting" which makes the thing a whole lot simpler for the uninitiated, "even as you and I."

SOME of the things you have heard and read about design, construction, erection and maintenance of oil field tanks—if you are a field man—may have caused you to skeptically remark, a la the Baron, "Vas you dere, Charlie?"

But now cometh one who definitely "vas dere," Otto D. Stallard, Jr., superintendent of gaugers for Magnolia Pipe Line Company. He tells in a forthcoming issue of THE OIL WEEKLY *of workable methods. His nine-page article is accompanied by drawings for proper layouts of the placing of flanges, hanging of hatches, the placing of flow, test and treater lines.*

Trouble is liable to arise if the best tank in the world is improperly placed in a battery or if the gauger, be he the most careful in existence, has to be a contortionist to make an inspection. Stallard tells you how to scare that trouble away. Each of his drawings hits a bullseye on diagnosing and prescribing for a common ailment.

The changing panorama

THE general situation in the oil industry continues satisfactory, despite the difficulties that have arisen because of reduced general business activity. With the aid of the conservation officials of the oil states, the industry has succeeded in curtailing output of wells and refineries into close conformity with market requirements. And from well to service station, the markets of the industry now are on a relatively stable basis.

Gasoline Decline Chief Damage

So far, the only important damage that the business slump has brought has been the impairment of the gasoline price structure, quotations having declined materially since last September, from refinery to retail outlet.

Prices of most of the other refined products have held largely unchanged in the meantime, and the crude oil postings also have stood their ground.

Crude Control Stabilizes Markets

A large part of the credit for this satisfactory maintenance of the markets belongs to the oil producers and the oil conservation officials in the leading producing states.

For the success that has been achieved has occurred despite excessive refinery activity, which resulted in the building up of surplus stocks of gasoline.

The producing division has curtailed output when curtailment was needed, and the prices of crude and of some of the refined products have been saved; in the face of the uneconomic course pursued in the refining division.

And appropriately, the producing division so far has been receiving its just reward, in the form of unchanged prices; while the refining division has been paying a penalty for intemperance, in the form of lower realized prices for gasoline, glutted markets, and forced shut-downs or curtailment of refinery operations.

Moreover, it is contemplated that the producing division and the state officials will extend into the spring the special efforts to hold crude production in line with market requirements.

Bureau Forecast Shows Caution Needed

Maintenance of crude oil production for the next six months at a level of approximately 3,400,000 barrels a day was last week seen necessary by the Bureau of Mines if gasoline stocks at the close of next September are not to be of menacing proportions.

The bureau's caution was voiced in its forecast of March demand, and was based on the expectation that gasoline stocks by the close of the month will be approximately 93,000,000 barrels, a level too high by 11,000,000 to 12,000,000 barrels.

East Texas Crude Cut Threatened

Although the oil industry's markets are holding generally steady, there are some indications that the established crude posting of $1.35 a barrel in the East Texas field is in danger. It is being predicted by some that the price may be cut back at least to the $1.27 level, from which it was raised 8 cents on May 22, 1937.

This possibility of an East Texas cut looms largely because of a local situation, and it is not seriously

An American Business Man Talks

AN example in common sense comradeship between management and employes is afforded in the talk made by P. C. Jones of the S. M. Jones Company to employes of his company in connection with a bonus paid by the company to its employes a few weeks ago. The talk, a direct-from-the-shoulder, straight-forward, sound talk on business and employer relations, might well be taken as a model by American business men. After commenting on his part as a salesman in helping to dispose of the products manufactured by the employes, Mr. Jones discussed frankly a number of the problems with which he is concerned and with which his employes, without realizing it possibly, are also confronted, particularly the undistributed profits tax. Concluding, Mr. Jones set forth his idea of the right relationship between management and employes when he said:

"It is hard enough for an old fellow like me to bat around the country in airplanes and sleeping cars selling sucker rods, without being bedeviled and pestered, harassed and treated like a convict by the government, and I am getting tired of it. Old and tired as I am, I have no notion of lying down or quitting, if we can have the right kind of understanding and co-operation in this shop, and I am going to wind up this speech by telling you what I think is the right thing for all of us to do.

"1. Let us have faith in each other—let the fellows in one department have faith in and good understanding with those in every other department.

"2. Let us have faith between every employe and the management—between every employe and supervisors, foremen, superintendent and president.

"3. If we have troubles, let us get together and talk them out and settle them like men should.

"4. Let us all figure that this is our business and when anyone can cut out some waste or loss or make an improvement, he is benefiting himself, and every one in the plant and not merely benefiting a soulless corporation.

"5. Let us have the full and hearty co-operation that will insure steady employment and stability for all of us."

feared that any reduction would be extended beyond the limits of the big field.

The East Texas producers, through persistent overdrilling, have pushed the allowable of the field so high that the production no longer finds a ready market. And the problem has been further complicated by the keen competition of other fields, some of which, particularly along the Gulf Coast, are cutting into the East Texas market, because of the advantage of lower freight rates to points of consumption.

Still another circumstance endangering the East Texas market is the fact the gasoline market has weakened, making refining by independents in the area unprofitable. Numerous small plants have closed down, and are no longer taking crude from the producers.

Prices Under Government Scrutiny

The gasoline situation may have an exceptionally prompt effect on the crude market at this juncture, inasmuch as the Department of Justice recently began investigating the possibility that East Texas crude prices may have been maintained artificially in the face of lower gasoline prices. Independent refiners have complained that the Madison trial caused cessation of major company buying of gasoline and resultant lower product prices, and that they consequently have been damaged. But the government has intimated, through its action, the suspicion that the refiners have been hurt not by the trial but by an artificial maintenance of crude prices, in the face of lower gasoline prices.

Connally Act Repeal Sought

Enactment of the Connally Act made possible the "conspiracy" of which a number of individuals and concerns were found guilty at Madison, Wisconsin, it is charged by Representative John M. Coffee (Democrat) of Washington, who is seeking repeal of that statute.

Introduction of the bill is seen as induced by the independent marketers who have long charged that the Connally Act, the interstate compact, the import taxes and the Bureau of Mines forecasts constitute the four props on which is built domination of the entire industry by the integrated companies.

Protest Federal Shore Plans

Needs of the Navy for additional oil reserves were discussed last week at hearings before the House Judiciary Committee on the Nye resolution, directing the Attorney General to press the claim of the United States to the California "off-shore" oil fields and possibly to similar fields in other states.

Texas, Louisiana and Mississippi officials were present to protest enactment of the measure, which they feared would lead to litigation over the title to their own off-shore lands.

The hearings revealed that the lands in question constitute a "no man's land," ownership of which has never been settled in the courts. Even the Department of Justice representatives admitted they did not know whether title lay with the state or the federal government or even if there was any title.

Drilling

RATING of Ellenberger lime as a potential source of production in the general K-M-A district was strengthened when a wildcat 4-1/3 miles northwest of the field's deep production cored saturation before encountering water.

In West Texas, Yoakum County's portion of Wasson field was extended 1½ miles southeast.

South and west offsets to the new Ramsey pool discovery well in Oklahoma were brought in last week. A Stephens County wildcat filled 750 feet with oil overnight from sands below 9000 feet. Two miles west of West Norfolk, a Payne County wildcat was good for 4 million cubic feet of gas from Prue sand.

Kansas recorded a likely extension for Sittner pool in Stafford County. Drach pool, also in Stafford County, has several tests which look like extension wells.

In Southwest Texas, a Frio sand field was opened in Jim Wells County; another was opened in San Patricio County. Both counties have prospective fields scheduled for opening next week also. Nueces County's Turkey Creek was limited to the southwest and west, but an extension to the east indicates the field still may embrace comparatively large area. Two failures in Saxet Heights' deeper pay reduced possibilities of that pool.

Fairbanks field, Texas Gulf Coast, was extended 3000 feet. Minor flank extensions at Orange continue.

Market briefs

Outlook—Markets showing some improvement.

Crude Markets—Prices holding.

Refined Oil Markets — Gasoline prices tending to rise; fuel oil prices sagging.

CURRENT OPERATIONS

Week Ended	Daily Crude Production	Daily Crude Runs to Stills
February 19...	3,369,250	3,150,000
Previous week.	3,324,500	3,150,000
Year ago.....	3,295,950	3,065,000

CRUDE STOCKS

Date	Crude Oil (Barrels)
February 5.....	304,494,000
Week ago.....	304,286,000
Year ago.....	286,116,000

REFINED OIL STOCKS

Date	Gasoline (Barrels)	Gas & Fuel Oil (Barrels)
February 19....	89,774,000	119,948,000
Week ago.....	87,813,000	119,293,000
Year ago.....	74,798,000	99,391,000

DRILLING

Period	Wells Completed
Past week.....	467
Previous week.....	431
Year ago.....	467
Year Total:	
This year.....	4,111
Last year.....	3,979

Technology

PROVEN crude reserves in the United States have reached a new high total of 15,507,268,000 barrels according to the American Petroleum Institute's crude reserve committee. This figure is an increase of 2,443,868,000 barrels than reported a year ago. Half of the reserves are placed in Texas. Details of the Institute's reserve report appears on page 18.

Little has been published on the subject of bettering picturing acid possibilities. Therefore of great value is the article on page 20, which presented an acidizing index by which laboratory work on cores makes it possible to determine the adaptability of formations.

Carefully handled, squeeze cementing has many useful applications, some of which are discussed in an article starting on page 38. It has proven exceptionally valuable in shutting off water and in reducing gas/oil ratios, thereby prolonging the natural flowing lives of many wells.

"How Much Crude Reserve Has U. S. S. R.?" This interesting discussion by L. David Wosk, made after an inspection tour, continues in this issue. This particular chapter discusses the most important area of the Soviet Union—the Azerbaijanian fields.

Legislation Trends

States waging bitter fight against bill proposing federal ownership of offshore lands . . . Measure introduced that would repeal Connally hot oil law

IT developed last week that several states are prepared to wage a bitter fight against the proposed bill that would vest the title of all ocean lands in the hands of the federal government. While this overshadowed other legal developments of the week, another important measure was introduction of a bill that would repeal the Connally hot oil contraband act.

Ocean ownership fight

Representatives of three Gulf states having possible oil fields under their off-shore waters gathered in Washington February 23 for a series of hearings before the House Judiciary Committee on the Nye resolution directing the attorney general to assert title of the United States to the California off-shore fields.

The Gulf states' representatives were concerned over the legislation, which was passed by the Senate August 19, last, because of amendments proposed by the Navy, Interior and Justice Departments extending its provisions to all coastal lands of the continental United States lying between low water and the three-mile limit.

Featuring the hearings was the disclosure for the first time that the off-shore waters constitute a "no man's land," title to which has never been adjudicated by the courts, and the revelation also that the Navy Department is more concerned with getting possession of the known oil fields off the California coast than with any question of whether the federal government possesses title.

Recent predictions that our oil resources will be exhausted within the space of a few years were seen as activating pressure for enactment of legislation by the Navy Department, whose representatives indicated they took a serious view of the situation and were apprehensive that unless new reserves were secured within a short time they would soon be left without an adequate supply of oil in the event of war.

Want Court Action

Declaring that "untold millions" in oil resources are at stake, Senator Nye (Rep., N. Dak.) explained that the purpose of the bill is to instruct the Department of Justice to seek a determination of the government's rights to the submerged lands in states which came into the union under such conditions that their public lands became the property of the United States.

All matters of controversy as to the right of the government to title, he said, would be ironed out by the legal proceedings to be brought under the legislation. "Until that determination is had," he explained, "Congress has not a thing to work upon for what might be its desire and effort to retain these reserves for the government."

The senator gave his approval to recommendations worked out jointly by the Navy, Interior and Justice departments for changes in the resolution to make its intent clearer and to assure that any oil-bearing lands repossessed would go to the first-named department as a naval oil reserve.

Under the suggested "compromise," the president would be authorized to set aside such deposits as reserves subject to any superior right, title or interest of any person, organization or state as may be recognized and established in the judicial proceedings.

When any reserve was so established, the attorney general would be authorized, by speedy and appropriate judicial proceedings, to assert the right, title, interest or possession of the United States to the lands and eject all persons now occupying them. The property, it was emphasized, would not be taken by "eminent domain."

Explaining that he represented individuals who had sought unsucessfully to secure prospecting permits to the California off-shore lands from the secretary of the interior, Thomas L. Blanton, former Texas congressman urged amendment of the bill so as to assert the title of the United States not only to the submerged lands lying between low-water and the three mile limit but also to the tidelands between high and low water marks.

No Act Covering

"Congress has never passed any act giving title to either tidewater or submerged lands to the State of California or any individual," Blanton asserted in a lengthy brief. No question involving the respective rights of either federal or state governments to such lands has ever been before congress.

"The attorney general," he said, "should and must proceed against these big oil monopolies that have been taking hundreds of thousands of barrels of oil daily out of these deposits that belong to the people of the United States.

"If the attorney general had not had his time taken up so much with matters that are coming up every day close to Washington and had the time to go into this matter thoroughly and not just accepted the opinions rendered by someone in the interior department, I am sure there would have been action and I am sure if you can ever order the department of justice to go into this question thoroughly action will be taken to go after these big oil companies and make them pay for what they have already taken away from the people of the United States."

Declaring that the interior department has based its policy upon "dictum" instead of actual decisions of the Supreme Court, Blanton said Secretary Ickes consistently has refused to move in the matter until congress acts to declare the lands to be public lands.

Faced not only with the possibility of federal intervention but also with bitter litigation between the state and the municipalities over control of the California under-water oil fields, both state and municipal authorities are seeking to take out the oil as rapidly as possible, he told the committee.

A "chaotic condition" already exists, he said, citing the case of one of the shore communities which is seeking to take oil from lands ceded to it by the state for harbor development solely. That community, he explained, recently opened bids for development under specifications which require the initiation of drilling within 30 days and the starting of a new well as soon as one is completed, together with the pumping of completed wells to maximum capacity.

Texas Different

Under the treaty by which California was ceded to the United States by Mexico and the terms of the act admitting it as a state, he contended, the

Washington representative wants Connally Act repealed

Charging that the Connally contraband oil act was continued as "an attempt to perpetuate advantages obtained under the NRA by a few major oil companies" to the detriment of independent oil markets and consumers, Representative John M. Coffee (Dem., Wash.) introduced a bill in Congress February 21 providing for immediate repeal of the measure.

The Congressman explained his demand for repeal of the act was based on quotations from the testimony of defense witnesses at the recent Madison trial which, he said, shows that the legislation enabled the conspiracy to proceed and that its enactment was awaited by the conspirators.

"It seems to me that some things have happened recently that the committee which recommended this law for extension last year should study," Representative Coffee said.

"From the testimony of defense witnesses in the Madison trials, it seems that the conspiracy to raise gasoline prices for which these major oil companies were found guilty was conceived, planned and held ready for execution back in January and February, 1935. All the conspirators were waiting for was word that Congress had enacted the Connally Act and that the Department of the Interior had set up machinery for its enforcement."

In proof of his contention, the Congressman quoted from the testimony of Robert W. McDowell, Mid-Continent Petroleum Corporation official, who he said testified that the "plan" for which conviction was obtained "was not recommended for operation until the Connally Act or some other legislation was passed that would definitely put a stop to hot gasoline slopping over into the Mid-Continent territory."

federal government has the title to all under-water lands. However, he said in response to questions by committee members, this does not apply to Texas, which came into the Union under a different type of agreement under which it retained all the rights and privileges it had exercised as a republic, including control of under-water lands for a distance of three leagues, about 10-3/5 miles.

Explaining the attitude of the Navy Department, Captain H. A. Stuart, director of naval oil reserves, said the department is acting on the policy it is "better to be safe than sorry," and has taken cognizance both of claims that our oil reserves will be exhausted within a few years and of contrary cleaims that there is no immediate danger of exhaustion.

"The truth of the matter lies undoubtedly somewhere between the two," he commented.

"It would seem to be the part of prudence to take the side of the pessimists or conservatives, particularly so since both proponents base their arguments largely on estimates and not on definite figures," Captain Stuart said.

"I believe that the government should take over production in order to safeguard its interests and to insure an adequate supply of petroleum products aganist the day when such supply may be sorely needed. I would like to emphasize the need for these reserves, particularly on the West Coast, because there is little or no coal available there from which a substitute for petroleum can be manufactured.

For National Defense

"These reserves are desired solely for national defense and not as a source of revenue for the government. While it is true that these lands are adjacent to only a few states, it is likewise true that these states are among those which are in greatest need of protection by our naval forces."

Neither Captain Stuart nor Philip Buettner, principal attorney in the office of the Judge advocate general of the navy could explain to the committee just why the department felt it necessary to have legislation enacted asserting title to lands which it claims it already has control over.

Buettner repeatedly contradicted himself in answering questions of Chairman Sumners of Texas, saying first that the department wanted the oil for national defense and proposed to take it under the constitutional provision giving the government the right to seize for the support of the navy, later asserting the underwater lands were federal property.

The situation was eventually cleared up by Representative Hobbs of Alabama, who argued that none has title to the submerged lands but that the federal government has a superior claim to their use and contents.

This position was concurred in by Frank Chambers, representative of the attorney general, who exlained "we do not know whether title is in the state, in the United States or whether there is any title there at all."

What is sought by the resolution, he said, is to have congress declare a policy that the lands are needed for the national defense, in order that the de-

[*Continued on page 59*]

Proration Picture

Bureau suggests output be cut 46,600 barrels for March . . . Texas sets allowable 40,000 barrels under quota . . . No change for North Louisiana

FURTHER indication of the necessity of curbing the output of wells came last week, when the Bureau of Mines in its monthly forecast estimated demand in March would be 46,000 barrels less than in February and slightly below a year ago. Meanwhile, Texas, calling attention to the peak levels attained by gasoline stocks and their continual rise, went better by cutting its daily allowable to a point nearly 40,000 barrels below the Bureau's suggested quota.

Bureau report

Crude oil demand during the next six months will run at approximately 3,400,000 barrels a day, it was forecast February 21 by the Bureau of Mines in its monthly report predicting a daily average demand in March of 3,391,600 barrels.

The March demand, it was stated, is 46,600 barrels less than the estimate for February, 1938, and 51,100 barrels, or 1.5 percent, less than the daily actual production in March, 1937, but 5 percent higher than the demand for crude oil in the latter month.

The bureau found that crude production during the first four weeks of the current year averaged about 3,447,000 barrels daily, but that during the period crude stocks increased 818,000 barrels, of which 225,000 barrels was foreign oil—an increase of 593,000 barrels in domestic crudes—which would make the demand for domestic oil 3,426,000 barrels daily. This, it was pointed out, is close to the bureau's estimate of 3,407,000 barrels, the difference of 19,000 barrels accounting in part for "excess" accumulations in gasoline stocks.

"As finished and unfinished gasoline stocks on March 31, 1937 (81,651,000 barrels), were generally considered too high at that time, contemplated stocks of March 31, 1938 (93,000,000 barrels), may be considered too high by at least 11,000,000 or 12,000,000 barrels," the bureau commented in discussing the outlook for the next six months.

"Nearly all of this was accumulated after the low point of September 30, 1937; in other words, the surplus would be largely worked off if stocks on September 30, 1938, were no higher than on September 30, 1937, when they were 65,380,000 barrels.

"Using this as the gasoline-stock objective, contemplating an increase of 3 to 4 percent in gasoline demand and adjusting the monthly withdrawals from gasoline stocks so as to keep operations close to a uniform level, gives a crude oil demand for the next six months of just over 3,400,000 barrels daily, including crude runs of about 3,200,000 barrels daily with gains indicated in the fall when the need for storing heating oils will become more acute."

The estimate for domestic motor-fuel demand for March is placed by the bureau at 40,680,000 barrels, or 0.25 percent higher than the apparent demand in March, 1937, but about 5 percent above the estimated normal demand for that month.

Motor-fuel exports are estimated at 3,600,000 barrels, this apparently high estimate, as compared with actual exports last March of only 2,426,000 bar-

Estimated Crude Oil Requirements by States[1]

(Daily averages in barrels)

STATE	Forecast, March, 1938	Forecast, February, 1938	Actual Production, December, 1937
Texas	1,344,900	1,365,700	1,336,500
California	694,600	693,700	705,000
Oklahoma	547,700	569,700	569,500
Louisiana	239,400	239,400	241,800
Kansas	176,700	176,400	178,400
New Mexico	105,100	105,100	108,700
Michigan	51,600	52,800	51,400
Pennsylvania	49,700	50,400	52,900
Wyoming	46,400	51,800	48,700
Arkansas	38,200	36,800	42,200
Illinois	30,700	29,900	35,000
Kentucky	13,900	14,500	14,100
New York	13,800	14,000	15,000
Montana	13,300	12,400	12,400
West Virginia	9,700	10,000	10,600
Ohio	9,100	9,000	9,200
Colorado	4,500	4,400	4,300
Indiana	2,300	2,200	2,300
	3,391,600	3,438,200	3,438,000

[1] The estimates in this table have been calculated as the market demand requirements for the months stated and are not intended to be calculations of daily average demand for the current year or for any period other than the months stated. As no changes in crude-oil stocks are involved in these estimates, they represent demand rather than production.

Texas March Allowable Compared with Recent Months

DISTRICT	Allowable 12-18-37	Allowable 2-18-38	Allowable 2-1-38	Increase	Decrease
1 Southwest	29,474	32,957	33,134	177	....
2 Southwest	47,038	57,698	57,910	212	....
3 Gulf Coast	185,088	209,372	216,885	7,725	....
4 Southwest	154,468	171,906	175,012	3,106	....
5 East Central	27,334	28,956	27,826	.....	113
6 East Texas	59,135	78,194	81,192	2,998	....
6 East Texas Field	489,517	495,939	497,643	1,704	....
7 West Central	44,347	47,785	45,915	.....	1,870
7c West Central	22,969	27,398	27,426	28	....
8 West Texas	167,110	185,914	186,531	617	....
9 North Texas	60,650	65,635	67,086	1,451	....
10 Panhandle	70,443	72,928	76,613	3,685	....
Total	1,357,573	1,474,580	1,493,173	18,593	1,983

rels, being explained by the bureau as based on returns from the principal exporters.

"Stocks of finished and unfinished gasoline amounted to 76,990,000 barrels on December 31," the report continued. "According to statistics of the American Petroleum Institute, these stocks increased about 8,000,000 barrels during January, bringing them to approximately 85,000,000 barrels as of January 31. Assuming the increase in February is held to 6,200,000 barrels, the bureau's February figure, stocks on February 28 will be just over 91,000,000 barrels. In view of the seasonal decline in heating-oil demand and the surplus gasoline stocks, the increase for March was estimated as only 1,900,000 barrels, or somewhat less than normal. This increase, if realized, would bring stocks to a peak of about 93,000,000 barrels at the end of March, compared with actual stocks of 81,651,000 barrels a year ago."

Benzol and direct sales and losses of natural gasoline have been estimated as 950,000 barrels, making the estimated production of gasoline 45,230,000 barrels, which the bureau allocated among the several districts as follows:

East Coast, 6,480,000 barrels; Appalachian, 1,510,000 barrels; Indiana-Illinois, 7,720,000 barrels; Oklahoma, 2,880,000 barrels; Kansas-Missouri, 2,470,000 barrels; Texas inland, 3,590,000 barrels; Texas Gulf, 10,290,000 barrels; Louisiana Gulf, 1,380,000 barrels; North Louisiana-Arkansas, 920,000 barrels; Rocky Mountain, 1,110,000 barrels; California, 6,880,000 barrels.

Natural gasoline consumption at refineries in March is figured by the bureau at 6 percent of the total gasoline required, or 2,710,000 barrels. The yield of straight-run and cracked gasoline is placed at 43.3 percent, compared with 43 percent for February. The application of this yield to the estimated straight-run and cracked gasoline production of 42,520,000 barrels gives refinery crude-oil requirements as 98,140,000 barrels.

Foreign crude run to stills is estimated at 2,200,000 barrels; exports at 6,500,000 barrels, and fuel and losses at 2,700,000 barrels.

The application of the usual methods to the total estimated market demand for domestic crude oil gives the accompanying breakdown by states or origin.

Texas allowable below bureau's March quota

The Texas Railroad Commission has issued a new statewide proration order for the month of March providing for a daily allowable of 1,493,173 barrels. The commission will continue in effect throughout the month its order providing for a shut down of all fields on Sunday.

The only exception provided in the shut down order was the Rodessa field, which the commission will allow to continue to produce for seven days of each week to maintain the Texas portion of the field on a parity with the Louisiana and Arkansas sections.

The new proration order provides for an allowable 135,600 barrels below that which was ordered on December 18, 1937, the last time a statewide order was issued.

The effect of the Sunday shut down will be to allow Texas to produce at the rate of 1,305,205 barrels daily, or 187,968 barrels less each day than the total allowable fixed by the commission's order. Those fields which can shut down will be closed, and the remainder will be permitted to produce 6/7 of the daily allowable assigned. The total cut for the entire month effected by the shut down will amount to 5,827,032 barrels of crude oil.

The daily allowable of 1,305,205 barrels is 39,695 barrels less than the consumer demand for Texas oil during March as calculated by the United States Bureau of Mines. In addition to this, commission officials pointed out that 55,970 barrels of daily allowable will be exported, leaving 1,249,235 barrels to be consumed in domestic markets. The later production is 95,665 barrels less than the consumer demand.

In a prepared statement, Commissioner C. V. Terrell said:

"Stocks of motor fuel, according to the report of the Bureau of Mines for the week ending February 17, 1938, are approximately 11,300,000 barrels higher than they were last year at this time. We now have on hand 89,774,000 barrels of gasoline. Stocks are at an all-time high. Motor fuels stocks increased 1,961,000 barrels last week and the rapidity with which motor fuel stocks are mounting is unprecedented. They are rapidly becoming unwieldly and are creating a grave situation in the oil industry.

"The commission, therefore, feels that in order to balance supply with demand and to counteract the unnecessary creation of excessive gasoline stocks during the month of March, that the present oil allowable for Texas should be curtailed to the equivalent of four Sunday shut downs, and the allowable now on the schedule will be maintained in effect, except for minor adjustments."

The commission ordered an increase of 6000 barrels daily for the Conroe field and 526 barrels daily for the Sugarland field to provide oil for foreign export, and the O'Hern field was increased 2060 barrels to supply a similar demand.

The commission adjusted allowables for Talco and Sulphur Bluff to permit each field to produce at the rate of 50 barrels per well per day. This resulted in a reduction of 1110 barrels for the Sulphur Bluff field and an increase of 2564 barrels for Talco.

The Panhandle was raised 6000 barrels daily to permit operators there to produce with the same potential factor that is in effect in that West Texas field which has the lowest potential factor higher than the Panhandle field. For several months Panhandle operators have contended that they have been treated unjustly, because the potential factor for that area was lower than any other similar field in Texas.

A cut of 1445 barrels was ordered Shackelford County, gleaned largely from marginal wells incapable of producing the allowable assigned. The comparative figures mentioned above are based on allowables in effect on February 18, 1938.

Allowances for other fields were changed slightly, but in virtually every instance the

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Labor Situation

Government attorney asks dismissal of appeal and upholding of wage pact . . . Alberta proposes more regulation . . . Pennsylvania attacks injunction

LATEST development in Mexico's labor dispute was recommendation by the attorney general that the wage pact be upheld against 16 foreign oil companies operating in that country.

Further events in the industry included: the recent address of H. C. Fremming, president of the International Oil Field Workers' Union, at Odessa; the proposed amendment of the Alberta, Canada, legislature, to make further regulation of working hours possible; and the Governor of Pennsylvania directs appeal to the higher court with reference to enforcement of the state's 44-hour week law.

Mexican situation grave

Another legal blow against the claims of 16 oil companies was rendered last week when the Attorney General of Mexico recommended that the appeal

of the companies to the Supreme Court be dismissed. This appeal is against the ruling by the Federal Board of Conciliation and Arbitration awarding a collective contract, which would increase wages and social benefits by a sum variously estimated between 26,000,000 and 50,000,000 pesos.

The recommendation by the attorney general was made to the labor division of the Supreme Court, which must make the final ruling on the bitter conflict between the companies and the Syndicate of Petroleum Workers.

The attorney general ruled against the companies on every point and upheld the findings of the Conciliation Board, recommending that the award given by the board be put into effect immediately. This latest aspect of the case makes the oil companies' situation look even more unfavorable than before, for it is considered that the attorney general's ruling will greatly influence the Supreme Court decision.

This also marks the third time that government departments have upheld the original award given to labor. The first was a special board appointed by President Cardenas, the second by the Conciliation Board.

Officials of oil companies have persistently announced that they cannot and will not pay the increase. In addition to the monetary award contained in the collective contract, the companies view as exceedingly grave the granting of greatly increased control of the management of the companies to members of the union.

All clauses in the new contract have interlinked salary increases with additional posts of confidence for union members and would result in the companies being unable to formulate policies of employment or dismissal without union interference, it is claimed.

Pennsylvania court criticized

Governor George H. Earle of Pennsylvania last week accused the Dauphin County Court at Harrisburg with setting a "dangerous precedent" by restraining the administration from enforcing the 44-hour week law passed by the 1937 legislature pending a state supreme court ruling on its constitutionality. The governor directed the appeal to the higher court, plans for which were being made by administration leaders last week.

Enforcement of the law was curbed February 16 by a visiting Democratic jurist, Judge W. C. Sheely of Adams County, who granted a temporary injunction in a taxpayer's suit which restrains the state from enforcing the law or spending any money to administer it. Judge Sheely, although not ruling on the validity of the law, said that "a grave and serious constitutional question" is involved in the proceedings and, therefore, enforcement should be suspended pending final adjudication.

Despite previous warnings of Attorney General Charles J. Margiotti that the law is probably unconstitutional, state officials were obviously displeased at the county court's ruling. Margiotti is now faced with his duty of appealing the decision to the supreme court on behalf of the state.

In granting the restraining order, Judge Sheely held: "The question of the right of the court to issue preliminary injunctions restraining public officials from performing their duties imposed by a statute alleged to be unconstitutional, however, has been raised so frequently and determined that it should be free from doubt. It is not our function or our purpose to decide the constitutionality of the general 44-hour law upon a rule to show cause why a preliminary injunction should not issue. We are required only to determine whether there is a serious or grave constitutional question involved."

Alberta proposes amendment

The Alberta legislature, in session at Edmonton, has before it a proposed amendment to the Province's Industrial Standards Act which would make possible further regulation of hours of work after conferences between the minister of labor and industry, Hon. E. C. Manning, and representatives of various industries.

A majority of employers and employes of any industry in one or more zones may, under the proposed amendment, formulate schedules of wages and hours and days of labor so that the schedules may: establish hours of work of a working day and prescribe the hours of the day during which such hours of work may be performed; establish the maximum hours of work for a working week; establish the minimum rates of wages for regular working periods; establish, in particular, days in the week for the performance of

[*Continued on page 56*]

Oil in the Courts

May use either 27½ percent of gross or 50 percent of net for depletion . . . Texas confiscation law held constitutional . . . File Michigan trust suit

Depletion allowance ruling

Depletion allowances of oil property owners are to be based upon either 27½ percent of the gross income of the property or 50 percent of the net income, whichever is less, and in computing the latter there may be deducted from gross income from the property only the stipulated operating expenses, excluding development and equipment costs, it was held by the United States Board of Tax Appeals February 23.

The board's decision was rendered in pursuance of decisions of the circuit court of appeals, reversing the board's original findings in the case of Ralph W. Crews and others, in which development and equipment costs were permitted as deductions from gross income.

In reconsidering the cases, the board pointed out that it was acting in conformity with the established requirement that the lower tribunal accept the rulings of a higher court.

Michigan trust suit

Reverberations of the oil conspiracy charges levelled at many major oil companies in federal court at Madison, Wisconsin, were felt last week in Michigan, where Wayne County Prosecutor Duncan C. McCrea instituted criminal action against Standard Oil Company of Indiana and Gulf Refining Company, along with Detroit jobbers of both companies. The charges against both major companies are identical and allege gasoline is sold to certain favored retailers at cut rates in an effort to drive out independents, destroy competition and control retail prices.

The actions, brought under Michigan state law, bear a similarity to federal charges pending in Madison alleging use of uniform jobber contracts to control jobber margins, but are in no way similar to the charges based on buying programs which resulted in conviction of 16 major companies and 30 executives last month.

Five counts are set forth in the Michigan warrants: alleging conspiracy to destroy the business of independent retailers, control and regulate the market price of gasoline, prevent or restrict competition in the retail sale of gasoline, violation of a 1931 statute providing that in the same general area standard grade gasoline may not be sold by jobbers or producers to any one dealer for less than it is sold to any other retail dealer if the purpose is to destroy the business of a competitor or any retailer, and violation of a state law on selling to one retailer for less than to any other retailer.

No officers of the major companies are named.

Texas confiscation law

A decision of the Third Court of Civil Appeals last week implied that the Texas law providing for the confiscation of hot oil is constitutional. The decision was in the Joe Dyer case, and both sides had emphasized this question in writing briefs filed. The court pointed out significantly that "the major portion of the briefs are devoted to the discussion of constitutional questions. We will pretermit discussion of these questions as they have all been foreclosed by prior decisions."

Since the principal question discussed in the briefs was the hot oil confiscation law, it appeared that the court assumed this law to be constitutional.

It should be noted in this connection that no court has ever ruled directly on this point, although by implication the United States Supreme Court upheld the law in the Trinity Refining Company case.

Rodessa Loses Two Minute Struggle With Tornado

$250,000 property loss
20 dead
40 injured

Sum Total of Rodessa Tornado

Which last week flattened supply row, spreading buildings, contents and occupants over an area a mile long and four hundred feet wide in one of the largest oil field centers in the Ark-La-Tex or Tri-State district.

On the second floor of many supply buildings were quartered oil field workers and their families. These people were wiped out almost completely. Corrugated iron, used for roofing, was wrapped like tissue paper about the tops of pine trees a half mile away. Twisted girders of oil derricks were curled like shavings from a plane, while others protruded from what was once a home. Huge blocks of concrete, weighing about ten tons, once bases of derricks, were moved 15 feet. Everywhere devastating destruction, as shown in the accompanying panorama picture.

The tornado twisted off the derrick of one well, broke the Christmas tree. Result—millions of cubic feet of gas and distillate into the air, which, heavy with moisture, held it close to the ground while stiff winds carried the dangerous vapors a long distance. A scene as workers attempted to control the well is shown in one of the accompanying photographs. After more than a 24-hour battle, sufficient mud had been pumped in to check the flow.

There were the unusual stories of amazing escapes. For instance: E. V. Riley, Wilson Supply Company, is shown beside the desk that saved his life. When the storm struck he was talking to a customer at Jefferson, Texas. The next thing he remembers he was emerging from under the stout oak desk. He, the desk, and flooring were all that remained of the two-story building. Hurt? Heck, no! Just five tiny scratches that adorned his right hand. There were others just as fortunate—but to many it brought another type of story—one of grief.

The boom must go on. So today, oil companies are rehabilitating their company houses, supply concerns are doing likewise. Another week, and business will be conducted with feverish oil boom energy as usual.

Business Lull Retards Oil Use

Formerly rising trends of oil consumption have flattened out or turned downward in recent months, in consequence of recession

By L. J. LOGAN,
Associate Editor

IT has been demonstrated conclusively in the current business slump, as it was in the recent major depression, that the oil industry cannot move long against the general economic tide, despite its depression-resisting powers.

It is true that the industry has the advantage of comparatively stable demand for its products, as some oils, such as gasoline and fuel oil, have become virtual necessities. Even in lean years, much oil is used. Motorists curtail the normal use of their automobiles only with great reluctance. Motor buses, air planes, oil-burning railroads, and ships hesitate to discontinue schedules. Heating of homes is necessary. And all the wheels of industry are not idle at any time. In contrast with the demand for some other commodities, products and services, the use of petroleum resists depressions obstinately, showing a stability comparable with the consumption of such necessities as food.

Nevertheless, even necessities are bought sparingly and with difficulty when men lose their jobs or fear unemployment. And purchases of oils are curtailed, if not eliminated.

Current Lull Felt

The present business decline has brought a material decrease in employment, particularly in the steel, automobile, and allied industries, but also in other lines. And sharp curtailment of industrial activity has occurred, while commerce has diminished.

These declines have assumed serious proportions only in the past five months. But they already have exerted a material influence in the petroleum industry, interfering with the former trends of oil consumption.

Consumption of petroleum products began tapering off as early as last fall; and whereas the earlier months of 1937 had brought considerably larger demand than the corresponding months of the previous year, the closing months of 1937 showed, in some instances, smaller demand than comparable months of 1936.

In the early months of 1938 there has been a continuation of comparatively light demand for oils. Total demand for petroleum has been holding above the levels of early 1937, but some of the individual petroleum products are not being consumed in as large quantities this year as last year.

The upward trend of total petroleum consumption has been extended, but the curve has been flattening out; and for some of the products, formerly rising trends of consumption have turned downward.

These trends of consumption have made the much-discussed business recession a reality and a matter of serious concern for the oil industry.

And they show that there has been real cause for anxiety over the industry's markets and prices and ample justification for recent special efforts to balance crude production and refinery operations with market demand.

Rising Trends Halted

The leveling off of the formerly rising trends of oil consumption has been reflected most recently in the Bureau of Mines forecast of petroleum demand for March. Similar evidence had been given previously also in the forecasts for February and January. And figures now available on actual results in December show that even that early, numerous petroleum products were being used in smaller quantities than one year previously. The demand curves for such products already had ceased to rise and turned downward.

Forecast Reflects Slump

For March, this year, the Bureau of Mines forecast that the total demand for domestic crude oil production in the United States would be only 5.4 percent larger than the actual requirements in March of last year. This estimate indicated a further flattening of the upward trend of oil demand, as the similar estimate for February had anticipated a year-to-year increase of 7.2 percent in demand, while the January estimate made allowance for a 6.2 percent gain.

The March forecast also embodied the anticipation of some further flattening out of the hitherto rising trend of gasoline consumption. The bureau estimated that total motor fuel de-

Relatively Small Gains Over Year Ago Shown in Recent Monthly Forecasts of Demand by Bureau of Mines

(Barrels of 42 U. S. Gallons)

MONTH	Total Demand for Domestic Crude	MOTOR FUEL DEMAND		
		Domestic	Export	Total
January—				
January, 1938, forecast	105,610,000	36,500,000	3,800,000	40,300,000
January, 1937, actual	99,442,000	33,696,000	2,978,000	36,674,000
Change from year ago	+6.2%	+8.3%	+27.6%	+9.9%
February—				
February, 1938, forecast	96,270,000	32,550,000	3,200,000	35,750,000
February, 1937, actual	83,817,000	32,000,000	2,640,000	34,640,000
Change from year ago	+7.2%	+1.7%	+21.2%	+3.2%
March—				
March, 1938, forecast	105,150,000	40,680,000	3,600,000	44,280,000
March, 1937, actual	99,738,000	40,561,000	2,426,000	42,987,000
Change from year ago	+5.4%	+0.25%	+48.3%	+3.0%

mand in March, 1938, would be 3 percent larger than in March, 1937. For February the bureau had forecast a similar year-to-year gain of 3.2 percent in total motor fuel demand, and in January a 9.9 percent gain.

The gasoline demand has been holding up even this well only through benefit of exceptionally heavy exports. Thus the March estimate embodies the expectation of a 48.3 percent larger gasoline movement to other countries than in that month last year, while the February and January estimates contemplated increases of over 20 percent in exports.

The domestic demand for motor fuel, representing the bulk of the total, has reflected in marked degree the interruption of the former trends. For March the Bureau of Mines estimated the domestic requirements of motor fuel at 40,680,000 barrels, or only ¼ of 1 percent higher than the apparent demand in March, 1937, although about 5 percent more than the estimated normal demand for that month.

The bureau had estimated that for February the domestic motor fuel demand would be 1.7 percent larger than in February last year, and it forecast for January a similar year-to-year gain of 8.3 percent.

December Report Significant

The slowing down of business for the petroleum industry is reflected perceptibly in the lately released figures of the Bureau of Mines covering results in the industry in December and the full year 1937. Some of those figures are presented in an accompanying table.

They indicate that as a whole, 1937 brought substantially larger petroleum demand and production than 1936, but that the gains did not extend through the closing portion of 1937. Plus signs were needed in nearly all instances to compare 1937 results as a whole with those for 1936. But in comparing December, 1937, demand for petroleum products with December, 1936, requirements, minus signs were necessary in numerous instances. And in nearly all cases, the December comparisons were less favorable than the full year comparisons.

Total Demand Flattens

Total demand for United States oils in all of 1937 was 9.5 percent larger than in 1936. But the total demand in December, 1937, was only 2.5 percent larger than in December, 1936.

These figures on total demand embrace requirements for both domestic use and for exportation.

The total domestic demand for all petroleum products in 1937 was 6.9 percent larger than in 1936. But for December, 1937, the entire domestic requirements were only 4/10 of 1 percent larger than in December, 1936.

Gasoline Demand Less Brisk

The domestic demand for motor fuel, consisting largely of gasoline, was 7.7 percent larger in 1937 than in 1936; but it was 3/10 of 1 percent smaller in December, 1937, than in December, 1936.

Domestic demand for kerosene in all of 1937 was 6.8 percent larger than in all of 1936; but in December, 1937, it was only 4.4 percent larger than in that month of 1936.

The domestic demand for gas oil and distillate fuels in 1937 was 14.2 percent larger than in 1936; but in December, 1937, it showed an increase of only 11.1 percent.

Residual fuel oils were required in 5.4 percent larger quantity in 1937 than in 1936; but in consequence of curtailed industrial activity, the domestic demand for these heavier oils was 2.2 percent smaller in December, 1937, than in December, 1936.

Lubricant Demand Declines

The decline of industrial activity also has caused the domestic demand for lubricants to turn downward. Such demand for all 1937 was 4.7 percent larger than for all of 1936; but in December, 1937, the requirements were 18.2 percent smaller than in December, 1936.

Wax showed a decline in domestic consumption even in the full year comparison, but the contraction in demand was more pronounced in the closing portion of 1937.

Coke also was used less extensively both for the full year, 1937, and for December.

Curtailment of building in general and of highway construction and work in the latter portion of the year is reflected in the figures on asphalt and road oil. The domestic demand

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Business Decline Has Interrupted the Former Sharply Rising Trends of Oil Demand and Production

This table shows supply and demand of all oils, and is based on latest Bureau of Mines Monthly Report on Petroleum

(Thousands of Barrels of 42 Gallons)

ITEM	YEARLY COMPARISON 1936	1937	Change of 1937 from 1936 (Percent)	RECENT TREND December, 1936	December, 1937	Change of Dec., 1937 from Dec. 1936 (Percent)
New Supply:						
Domestic production:						
Crude petroleum	1,099,687	1,277,653	+16.2	97,723	106,579	+ 9.1
Daily average	3,005	3,500	+16.5	3,152	3,438	+ 9.1
Natural gasoline	42,770	48,550	+13.5	4,019	4,305	+ 7.1
Benzol	2,502	2,786	+11.3	247	151	—38.9
Total production	1,144,959	1,328,989	+16.5	101,989	111,035	+ 8.9
Daily average	3,128	3,641	+16.5	3,290	3,582	+ 8.9
Imports:						
Crude petroleum:						
Receipts in bond	2,528	1,912	—24.4	266	138	—48.1
Receipts for domestic use	29,799	25,572	—14.2	2,348	2,254	— 4.0
Refined products:						
Receipts in bond	18,639	22,352	+19.9	1,397	1,709	+22.4
Receipts for domestic use	6,138	7,316	+19.2	921	506	—45.1
Total new supply, all oils	1,202,063	1,386,141	+15.3	106,921	115,642	+ 8.2
Daily average	3,284	3,798	+15.6	3,449	3,730	+ 8.1
Increase in stocks, all oils	22,685	45,340	+99.9	3,663	2,319	—36.7
Demand:						
Total demand	1,224,748	1,340,801	+ 9.5	110,584	113,323	+ 2.5
Daily average	3,346	3,673	+ 9.5	3,567	3,656	+ 2.5
Exports:						
Crude petroleum	50,313	67,686	+34.5	3,666	5,516	+50.5
Refined products	81,681	105,127	+28.7	6,506	7,033	+ 8.1
Domestic demand:						
Motor fuel	481,606	518,760	+ 7.7	39,590	39,457	— 0.3
Kerosene	51,428	54,951	+ 6.8	6,148	6,420	+ 4.4
Gas, oil and distillate fuels	102,757	117,377	+14.2	14,251	15,828	+11.1
Residual fuel oils	307,884	324,437	+ 5.4	28,255	27,636	— 2.2
Lubricants	22,323	23,374	4.7	1,821	1,489	—18.2
Wax	1,077	1,044	— 3.1	102	77	—24.5
Coke	6,266	5,765	— 8.9	555	506	— 8.3
Asphalt	20,595	22,936	+11.4	1,079	816	—24.4
Road oil	7,279	8,008	+10.2	193	162	—16.1
Still gas	57,046	61,296	+ 7.4	4,784	4,872	+ 1.8
Miscellaneous	2,099	2,249	+ 7.1	165	158	— 4.2
Losses	32,394	27,791	—14.2	3,469	3,353	— 3.3
Total domestic demand	1,092,754	1,167,988	+ 6.9	100,412	100,774	+ 0.4
Daily average	2,986	3,200	+ 7.2	3,239	3,251	+ 0.4
Stocks:						
Crude petroleum	288,579	306,084	+ 6.1	288,579	306,084	+ 6.1
Natural gasoline	4,055	4,758	+17.3	4,055	4,758	+17.3
Refined products	226,595	253,144	+12.0	226,595	253,144	+12.0
Total, all oils	519,229	563,986	+ 9.0	519,229	563,986	+ 9.0
Day's supply	155	154	+ 5.5	146	154	+ 5.5

Crude Reserves at Peak

AMERICAN PETROLEUM INSTITUTE ESTIMATES U.S. PROVEN RESERVES AT 15½ BILLION BARRELS

PROVEN petroleum reserves of the United States reached a new high total of 15,507,268,000 barrels on January 1, 1938, it is indicated in a report filed with the American Petroleum Institute by its Committee on Petroleum Reserves.

Large Increase

The estimate makes no allowance for possible reserves in untested areas, the report stated, representing only the amount of crude oil which may be extrated by present known methods from fields now completely developed or drilled, or sufficiently drilled and explored to permit of reasonably accurate calculations. The new total is 2,443,868,000 barrels greater than was reported by the committee as of January 1, 1937, and more than 3,330,268,000 barrels greater than was reported as of January 1, 1935.

The Institute's standing committee, comprised of petroleum geologists and engineers who have been working for months in cooperation with more than 100 other recognized experts, asserted that modern oil-field engineering practice is facilitating recovery and thereby augmenting recoverable reserves. Increases in estimated proved reserves were ascribed not only to new discoveries, but also to enlargement of productive areas and to greater producing efficiency, with the utilization of the natural water drive and the lifting force of gas acting to decrease the waste of energy and to increase recoverable volume.

The report showed that later developments had necessitated upward revision of the January 1, 1937, estimate of 13,063,400,000 barrels of proven reserves by 2,792,790,000 barrels. New reserves discovered during 1937 were estimated at 928,742,000 barrels, making the total 16,784,932,000 barrels. The report deducted from this figure 1,277,664,000 barrels as an estimate of oil produced in the United States in 1937, leaving estimated reserves as of January 1, 1938, at 15,507,268,000 barrels.

Texas Has Over Half

The report places 3,063,142,000 barrels of proven reserves in California, 399,839,000 barrels in the Rocky Mountain states, 11,508,205,000 barrels in the Central and Southern states, and 536,082,000 barrels in Eastern states. It is estimated that the reserves of Texas, 8,247,928,000 barrels, are the largest of any state, with California second, and Oklahoma third.

Institute records reveal 15,570,268,000 barrels to be the greatest amount of oil in sight in the history of the petroleum industry and therefore establishes a new high in proven recoverable reserves of

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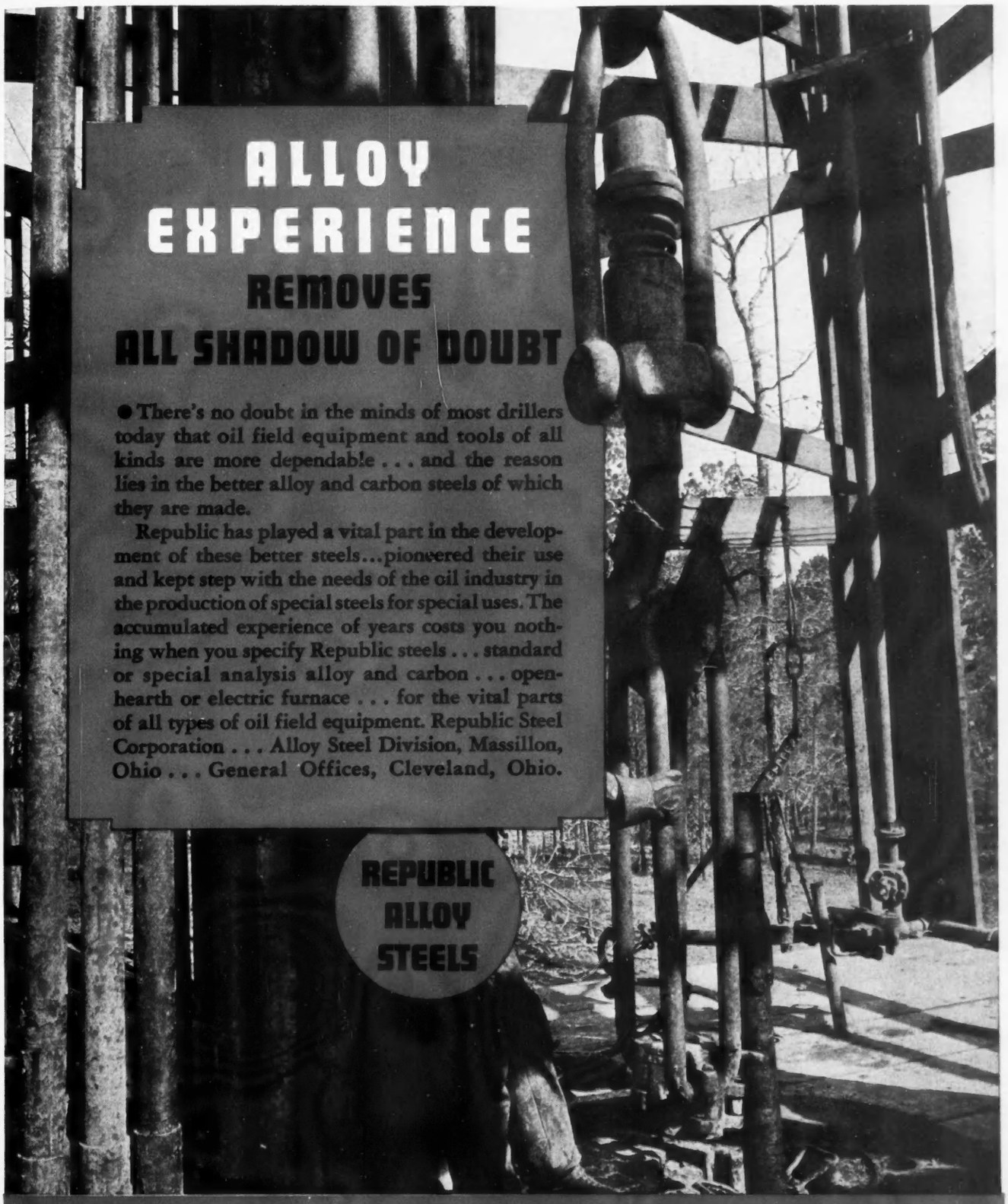
American Petroleum Institute Estimate of Proven Petroleum Reserves in the United States

(All figures in Thousands of Barrels)

	Reserves As of January 1, 1937	Revisions in Reserves in Fields Included in Column 1	New Reserves Discovered During 1937	Total (Columns 1 +2 +3)	Production During 1937	Reserves As of January 1, 1938
	(1)	(2)	(3)	(4)	(5)	(6)
California	2,955,726	295,000	51,000	3,301,726	238,584	3,063,142
Rocky Mountain States:						
Wyoming	238,980	20,625	25,050	284,655	18,733	265,922
Montana	91,810	23,400	.....	115,210	5,832	109,378
Colorado	15,222	3,400	2,000	20,622	1,497	19,125
New Mexico	5,793	.....	.....	5,793	379	5,414
Total	351,805	47,425	27,050	426,280	26,441	399,839
Central and Southern States:						
New Mexico (S. E.)	464,889	110,343	4,320	579,552	38,379	541,173
Texas	6,421,800	1,921,314	416,000	8,759,114	511,186	8,247,928
Oklahoma	1,141,000	242,464	57,228	1,440,692	228,440	1,212,252
Kansas	568,271	21,729	82,000	672,000	70,683	601,317
Arkansas	84,185	3,308	116,401	203,894	11,793	192,101
Louisiana	524,052	132,792	147,243	804,087	90,653	713,434
Total	9,204,197	2,431,950	823,192	12,459,339	951,134	11,508,205
Eastern States:						
Illinois	28,210	.....	20,000	48,210	7,326	40,884
Indiana	3,441	.....	.....	3,441	819	2,622
Kentucky	38,846	.....	5,000	43,846	5,480	38,366
Michigan	44,199	18,415	2,500	65,114	15,933	49,181
New York	66,000	.....	.....	66,000	5,465	60,535
Ohio	32,000	.....	.....	32,000	3,544	28,456
Pennsylvania	307,000	.....	.....	307,000	19,114	287,886
West Virginia	31,976	.....	.....	31,976	3,824	28,152
Total	551,672	18,415	27,500	597,587	61,505	536,082
Total United States	13,063,400	2,792,790	928,742	16,784,932	1,277,664	15,507,268

Notes: Column 1—From report of A. P. I. Committee on Petroleum Reserves, published in April, 1937, A. P. I. Quarterly, Vol. 7, No. 2.
Column 2—Developments during 1937, giving more complete and better information, indicate that these amounts should be added to the earlier estimates of the reserves in the known fields as of January 1, 1937.
Column 5—U. S. Bureau of Mines' production figures for first eleven months, with December production estimated by A. P. I.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Acidizing Core Samples

TO GUIDE EFFECTIVE TREATMENT AND TO APPLY COMPARATIVE INDEX RATING TO TREATABLE FORMATION

By L. C. CHAMBERLAIN, JR.
Dowell, Incorporated,
Midland, Michigan

ACIDIZING of producing formations has become an accepted procedure wherever oil and gas is found in a predominately limestone reservoir. The process, although familiar to the industry, has not been discussed as completely as has other branches of petroleum engineering.

Other than some mathematical approaches to the subject by Muskat and others [1] [2], showing what increased production might be expected from wells producing from uniform porosity, from crevices and from other heterogenous media; one paper[3] describing the acidizing of a core which showed increased permeability and one[4] which asserted that acidizing did not increase permeability, there has been little experimental analogy published whereby the mechanics of acidizing could be better pictured or better understood.

The literature on the subject of core testing is void of correlative data offering a practical means of rating treatability on a general, workable index.

Acidizing Cores

Acidizing of cores is practiced not to prove that acidizing increases their permeability, nor to vindicate the practice of acidizing, but as a means to improve field service by observation and comparison of the results obtained. By this method the best type of treating acid can be chosen; difficulties in treating may be recognized in advance; and the engineer, being forewarned, may be forearmed with means to produce results.

Core acidizing is also a means by which research men try out their theories on well treatment. Many good hopes have been blasted when cores flowed less rather than more after experiments. Yet also in this manner have such ideas as surface tension control of treating agents, directing agents, intensifiers, and many other benefits to acidizing been given their initial trials.[5]

It is in a well-equipped laboratory for research that acidizing theories are given their first tests, either to be encouraged or dropped.

In the course of this investigation, cores have been tested from most of the fields in which acidizing is practiced. Early in this study it was apparent that some comparatively simple means of rating samples for treatability was acutely needed. No quick reference was applicable, as a breakdown of the information gained did not always give a true picture of the results obtained by acidizing. To fill this need the Acidizing Index was evolved. This index is not necessarily a function of the type of treatment given but is more dependent upon the chemical and physical characteristics of the producing formation.

The Acidizing Index is obtained from the results of tests on cores, and is obtainable through the following calculation:

$$\frac{FP - OP}{OP} \cdot \frac{OW}{OW - FW} = I$$

FP—Permeability of Core After Treatment.
OP—Permeability of Core Prior to Treatment.
OW—Weight of Core Prior to Treatment.
FW—Weight of Core After Treatment.

I—Acidizing Index

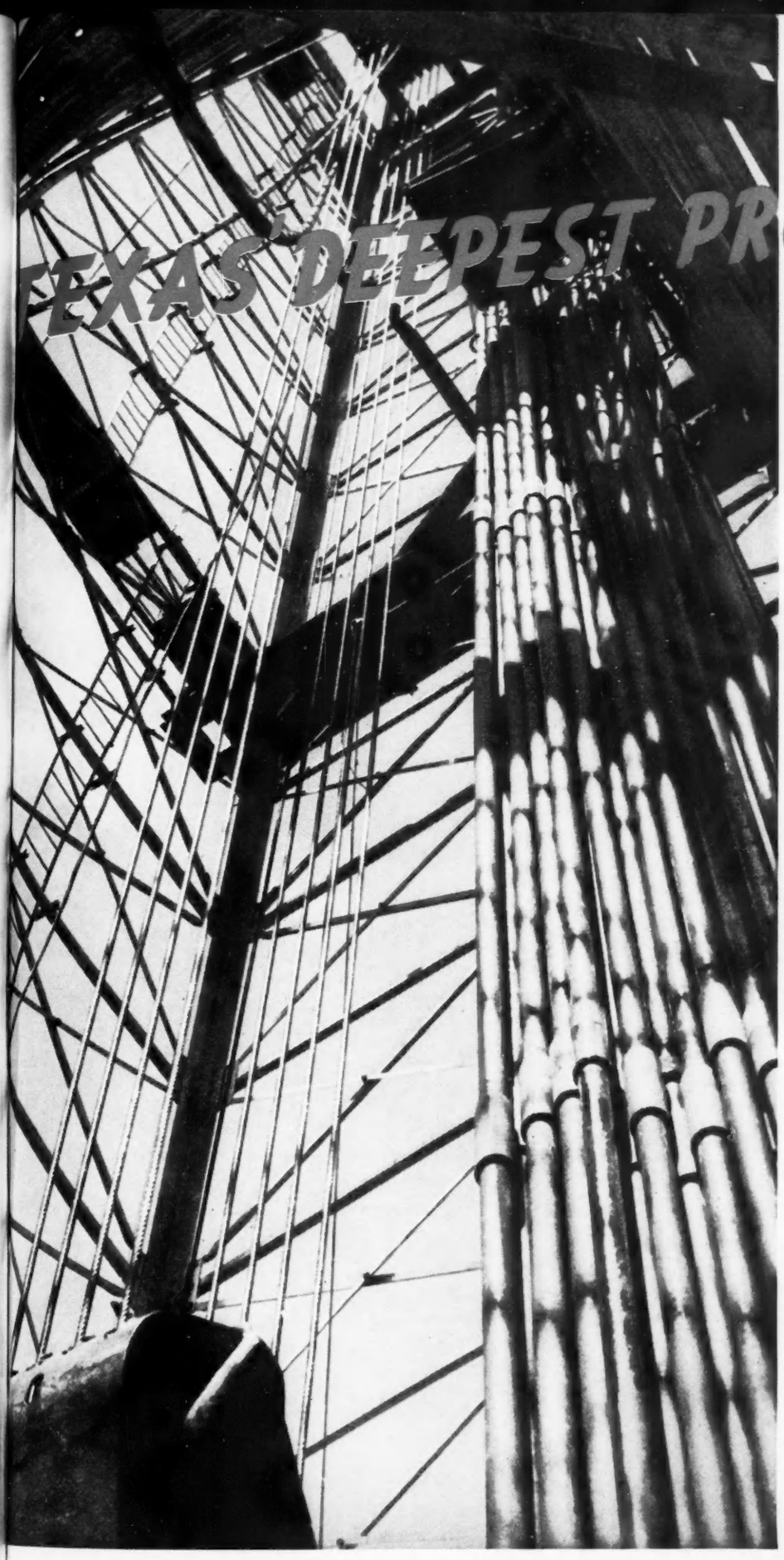
The Index, based on this calculation, is probably one of the best indications of the adaptability of the formation to acidizing. When the same amount of acid is used on two wells, that well which has the highest Acidizing Index, should give the greater relative increase in production.

It is interesting to note that the Index is a function

TABLE 1
Method of Determining Acidizing Index

No.	CORE	Solubility in 15 Percent HCl	$CaCO_3$ Percent	$MgCO_3$ Percent	Wt. of Core in Grams		Vol. of Core in Cc.		Porosity, Percent		Permeability Millidarcies		Increase in Permeability Percent	Acidizing Index*
					Before Acidizing	After Acidizing	Before Acidizing	After Acidizing	Before Acidizing	After Acidizing	Before Acidizing	After Acidizing		
53	Michigan Dundee	99.57	99.0	1.0	28.595	27.804	11.8	11.65	4.75	10.7	1.2	4,500	375,000	136,000
58	Wyoming Madison	99.0	54.2	42.5	35.930	33.479	13.6	12.42	7.32	6.46	0.84	1,800	214,000	31,500
63	Kansas Viola	98.1	50.6	35.3	28.414	24.903	12.5	10.7	20.79	11.68	56	72,000	128,600	10,380
64	Kansas Hunton	87.6	55.9	41.2	27.850	20.784	12.7	9.45	21.72	24.2	152	15,200	9,990	393
56	West Texas Permian	70.6	43.5	29.1	36.161	32.199	13.61	12.42	7.23	9.83	0.79	8.2	940	254
60	Kansas Arbuckle	92.81	56.4	40.7	36.078	33.350	13.7	12.8	5.5	8.86	54	390	625	82
55	Kentucky Corniferous	99.3	56.0	43.0	30.455	29.750	12.55	12.25	8.67	10.65	76	120	58	25.2
11	Ohio, Niagara	99+	54.7	46.8	38.94	37.02	17	16	17.9	.....	49	88	80	16.3

* The acidizing index is the ratio of Permeability Increase to weight lost and is thought to be a good indication of the suitability of formations to acidizing. The formations in the table are arranged in order of decreasing value of this index.



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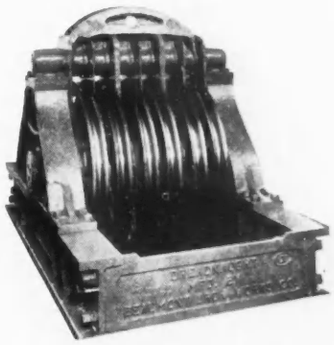
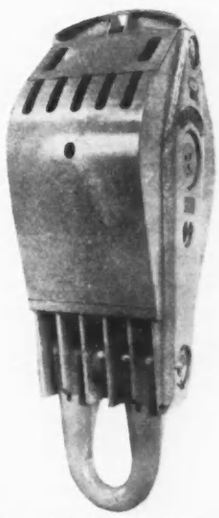


TYPE "KY" CROWN BLOCK — five or six 42" OD slow-wearing manganese-molybdenum steel sheaves, 300 and 360-ton capacity respectively with high safety factor; special designed Hyatt roller bearings; 7.873" diameter forged alloy steel center pin; patented A-frame construction reduces overall height and distributes load evenly to all corners of derrick.



TYPE "PY" TRAVELING BLOCK—300-ton capacity with high safety factor; sheaves and center pin same as in Crown Block; bail and becket pins of large diameter high-tensile nickel steel; extra heavy steel plates; forged alloy steel bail, split to distribute load evenly throughout block; streamline construction with low center of gravity makes for speed with safety.

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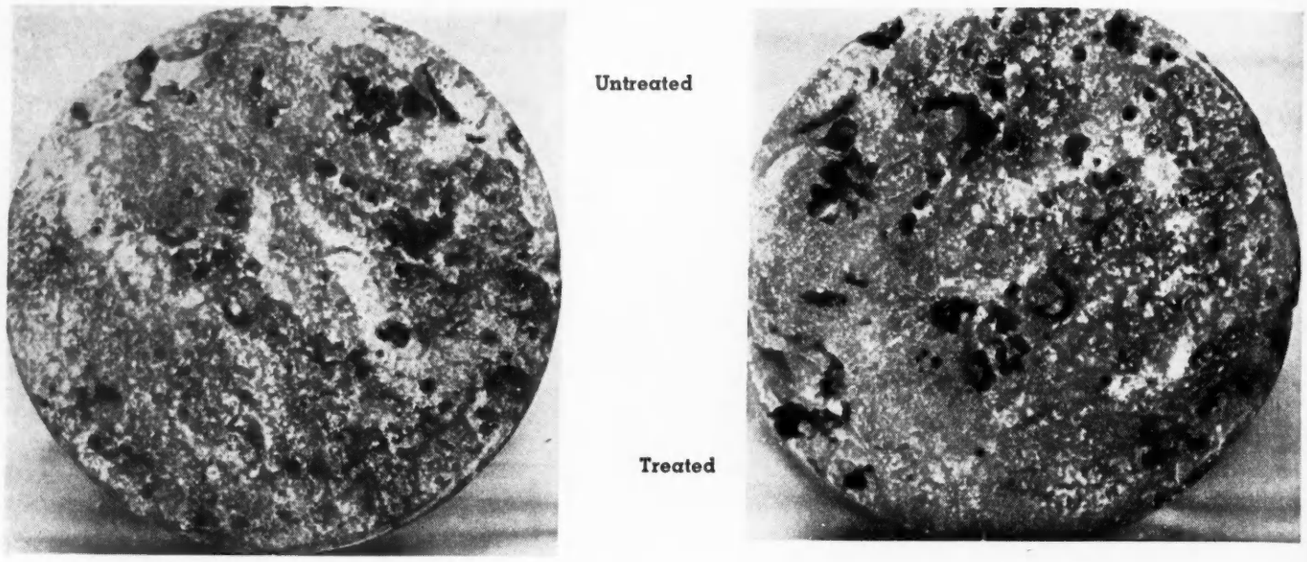

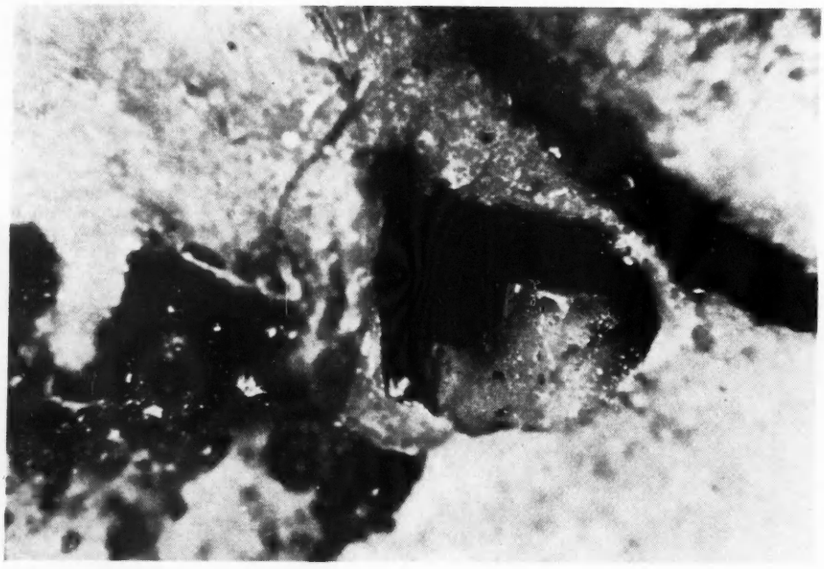

FIGURE 1

Michigan Dundee Core treated with 15 percent hydrochloric acid containing a surface tension lowering agent.

Close-up of Treated Core

of two factors, increase in permeability and loss in weight. The increased permeability of a core is a direct measurement of increased rate of flow and the increase is generally caused by removal of pore-blocking materials. However, this factor alone cannot be used as a measure of the treatability of a formation as it does not take into account the amount of material removed or the amount of acid used in the treatment. By using an index which is a function of both the increase in permeability and the loss in weight, a unit is obtained which does take into account both the increase in flow obtained and the amount of acid used.

Table 1 shows the values of the Index for representative samples of oil producing formations from six sections of the country. The analysis of each of the strata shows the amounts of calcium and magnesium carbonates present in the limestones. The solubility tests indicate the percentage of the formation which will dissolve in 15 percent hydrochloric acid. The weight and volume changes show both the reduction of the sample through the action of the acid, and the distribution of the reaction through the same sample. Resulting porosity in relation to initial porosity shows that an increase in void space within the core body has resulted from the treatment. Permeability before and after acidizing shows the relative fluid flow rates obtained through the core.

Since no two cores are exactly alike, even when taken side by side from the same formation, the interpretation and comparison of results from core acidizing is as much a question of expert and experienced observation as it is a matter of tabulation of data. Accurate knowledge of the source of the core and enough acidizing tests to insure a reasonable average are essential to successful selection of treating agents and methods.

In obtaining cores for laboratory testing of treatability it is unnecessary to go to great pains to protect the original saturated condition. Instead of

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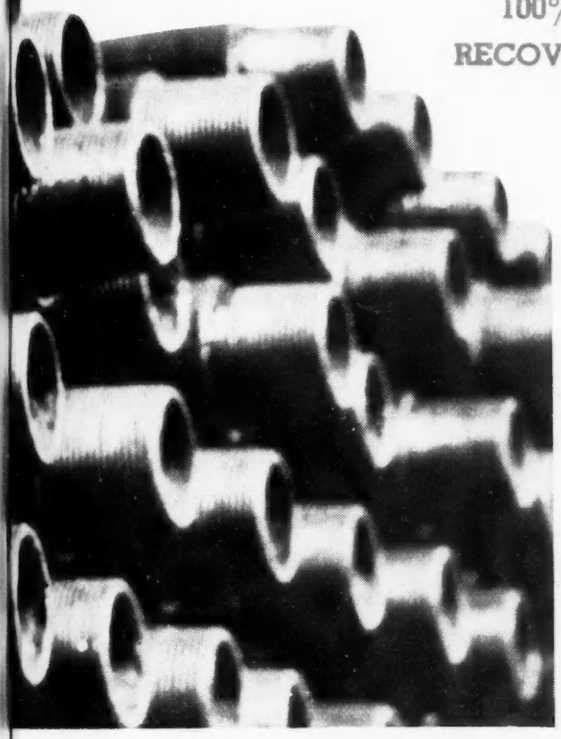

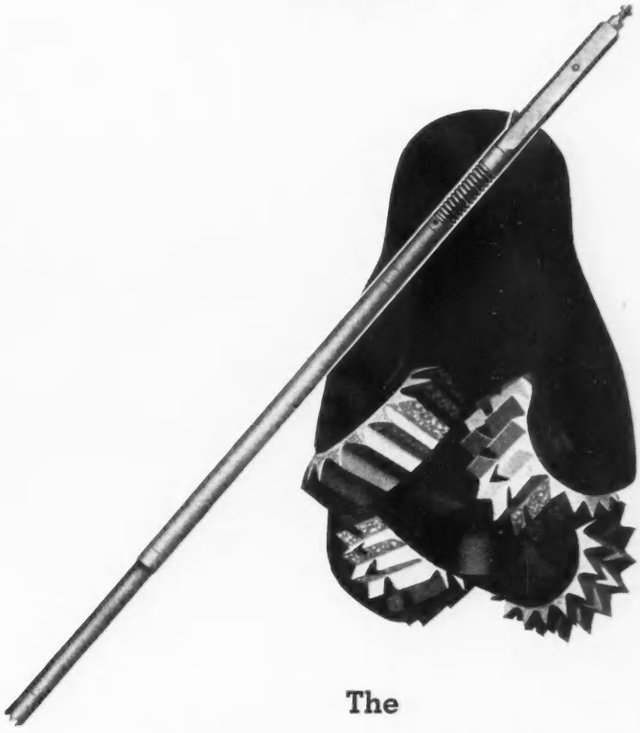

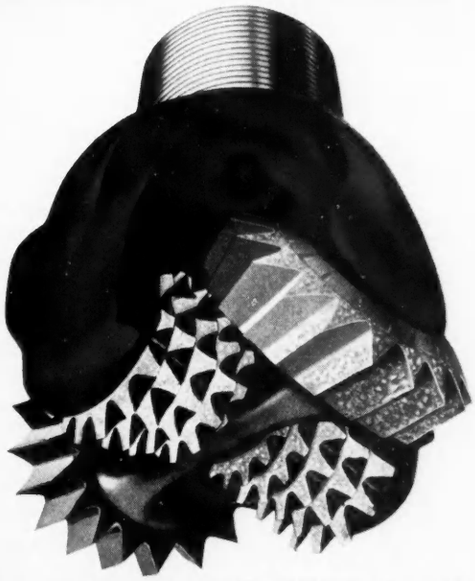

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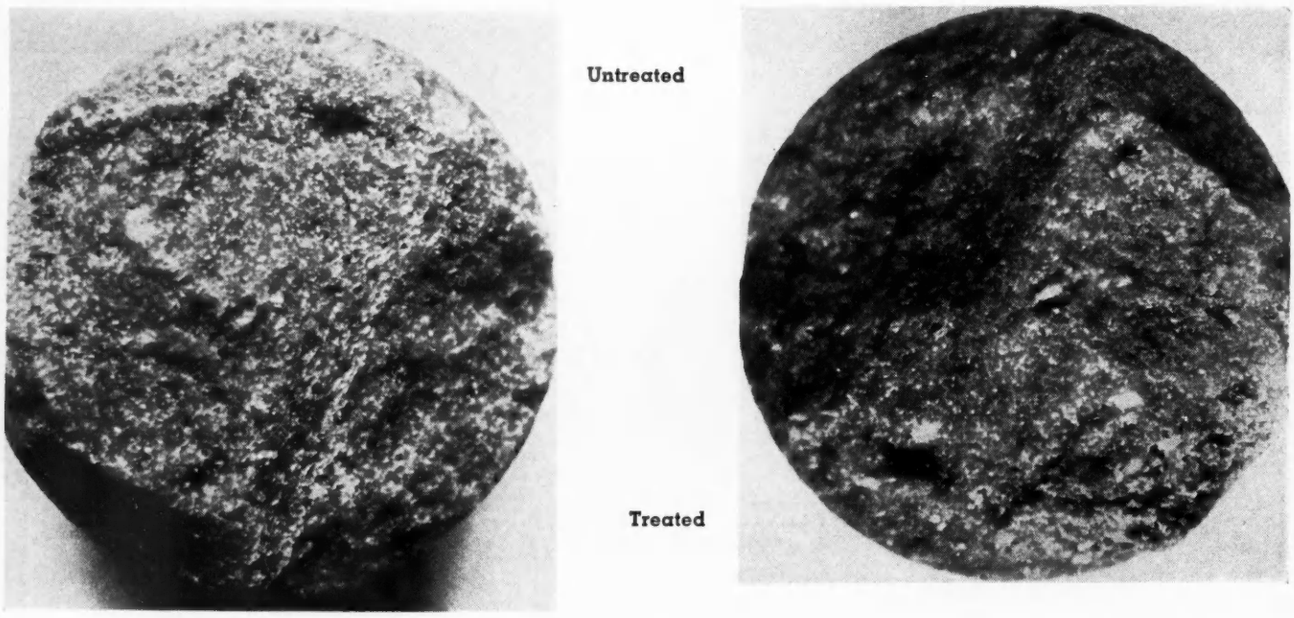


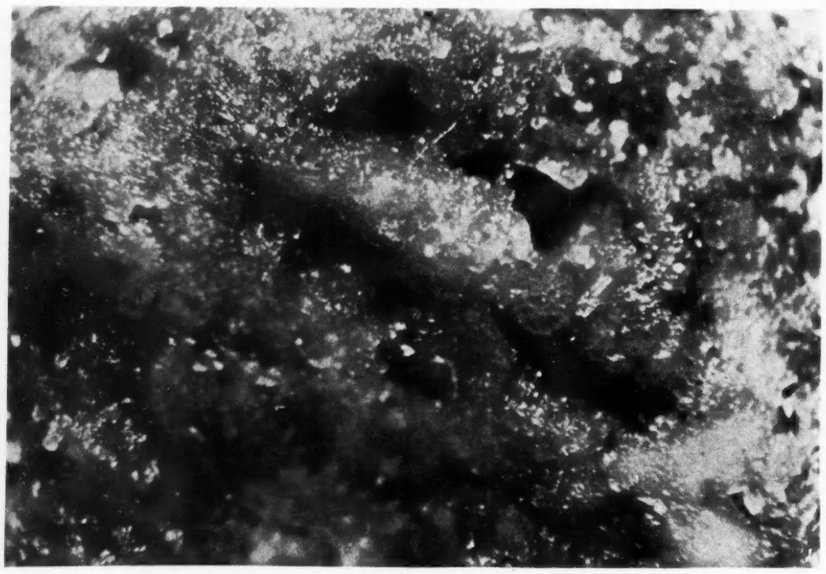


FIGURE 2

Corniferous limestone from the Little Big Sinking Pool, Kentucky. Treated with 15 percent hydrochloric acid. Treats easily, but has tendency to choke with spent acid, resulting in loss of permeability. Very little visual effect of acid other than rounding off of points. Uniform permeability with little or no secondary deposition.

Close-up of Treated Core

being obtained for the purpose of ascertaining the oil content, and factors relative to the probable productive possibilities, a core for acid test is desired for an examination of the physical characteristics of the core body and for the reaction of the core to chemical treatment. Any information relative to peculiarities of the formation aids in correctly interpreting laboratory data.

Illustrations of cores which appear on accompanying pages show in detail the physical characteristics described in the general table. The effect of acidizing of the cores is shown by comparing the photographs of treated and untreated cores. Laboratory data developed by the acidizing of these cores are given in the table as is the acidizing index.

The cores treated can be classified as follows:

(1) Those of appreciable and fairly uniform porosity
   (a) Well consolidated rock
   (b) Loosely consolidated rock

(2) Those which evidently produced from cracks, crevices or very scattered small pores.

The Dundee of Michigan, the Corniferous of Kentucky, the Niagara from Ohio are uniform in texture, permeability and are well consolidated.

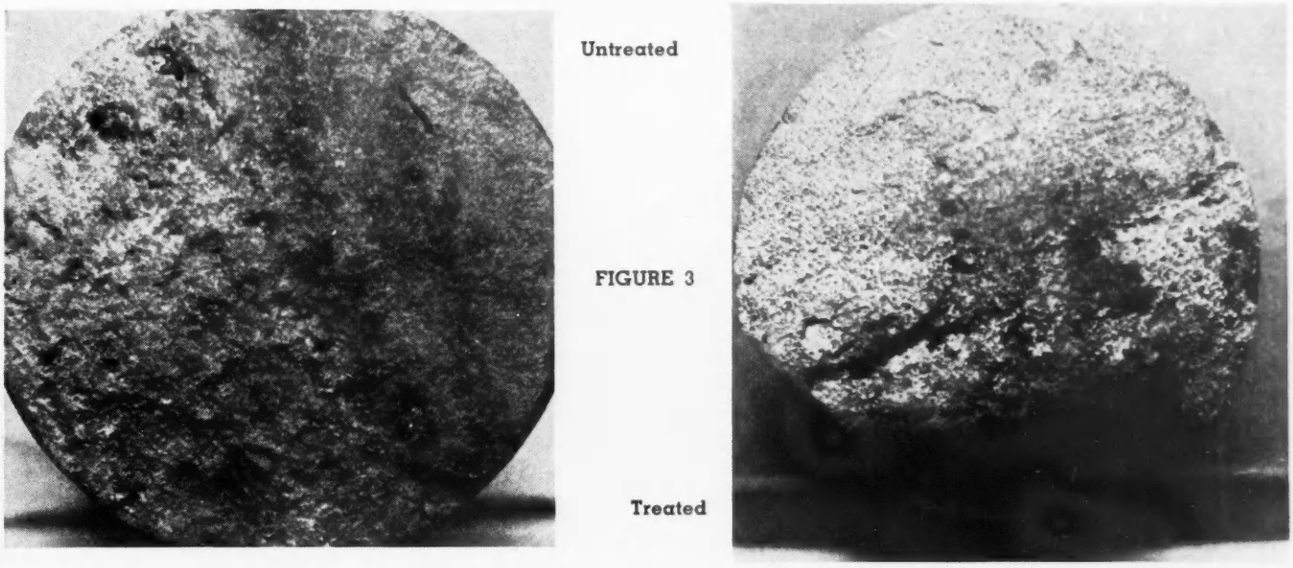
The Kansas Arbuckle contains streaks of permeable, yet consolidated, material, so that its action is similar to the Michigan and Kentucky cores, but is restricted to only a portion of the core.

The Hunton limestone (dolomitic) and the Viola are uniformly porous and permeable, but are either loosely-consolidated formations or consist of lightly-cemented crystals. These formations are found in Oklahoma and Kansas.

The West Texas Permian and the Wyoming Madison cores are both dense dolomites, practically impermeable over most of their area, but having cracks or laminations which provide some passage for the oil.

Discussion of Core Acidizing

In all cases it was possible to increase the rate of

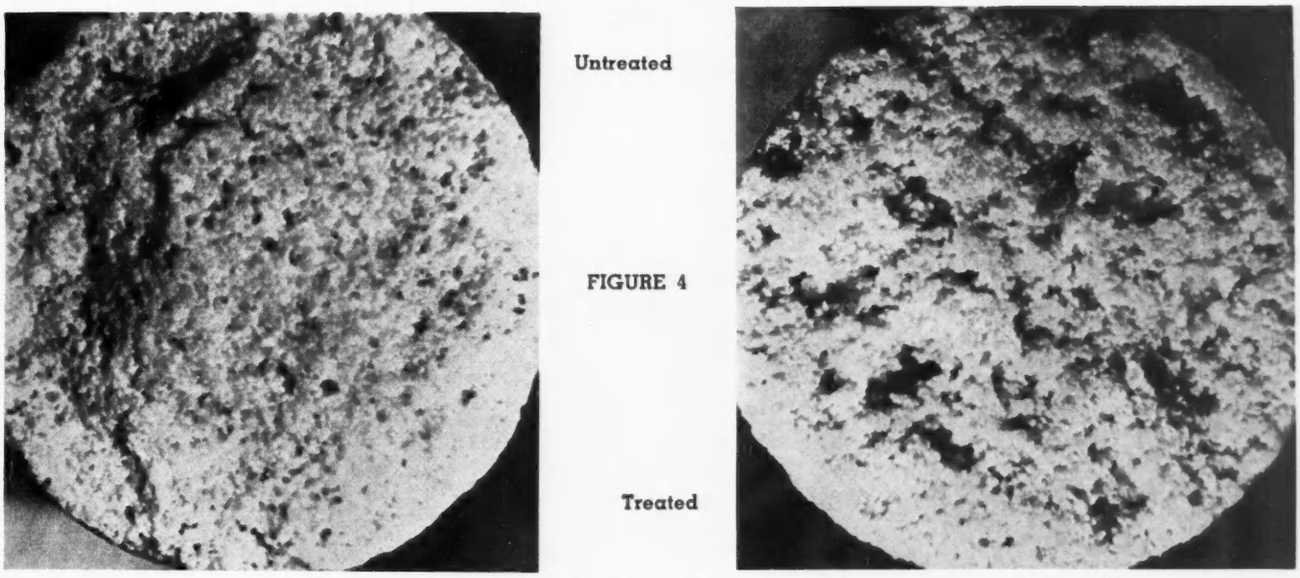


Untreated

FIGURE 3

Treated

Kansas Arbuckle Core. Dense core with permeable streak running obliquely from end to end. Appearance of core and treating response indicate uniform structure within permeable section.

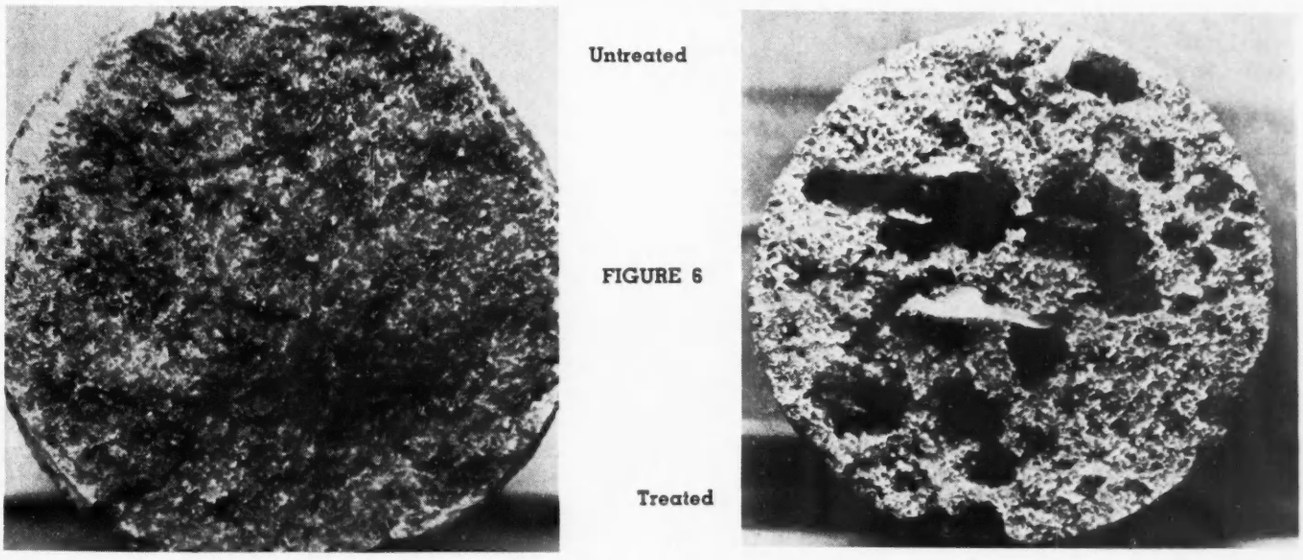


Untreated

FIGURE 4

Treated

Niagara dolomite (Ohio) core treated with 15 percent hydrochloric acid containing a surface-tension-lowering agent. Uniform structure, moderate channeling.

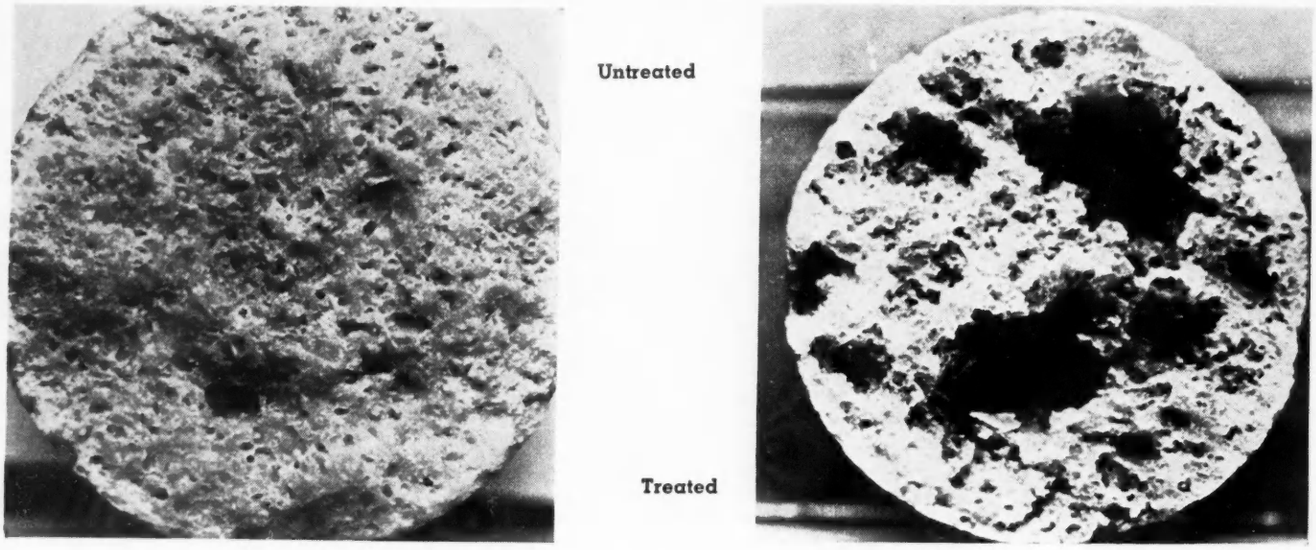


Untreated

FIGURE 6

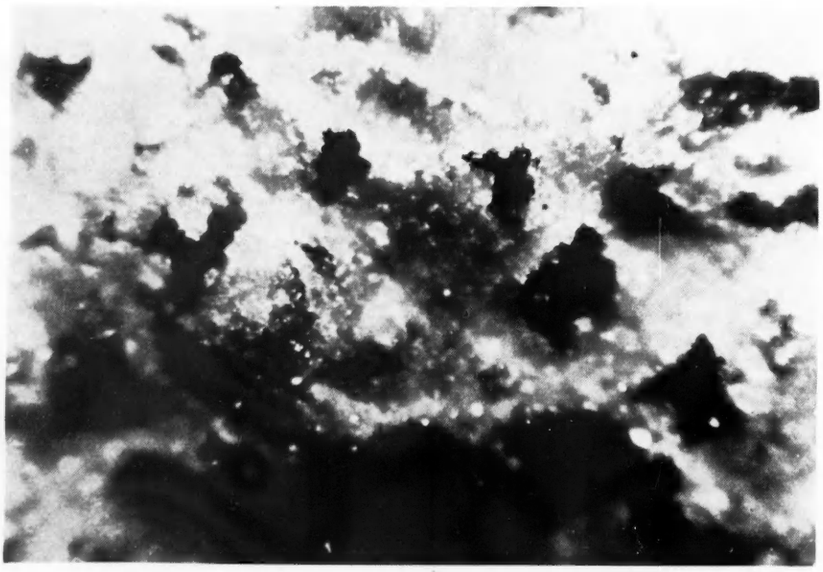
Treated

Viola (Kansas) core treated with 15 percent hydrochloric acid plus an aromatic penetrating agent. High resistance to acid until acid channels through core. Small crystals dislodge from walls and plug pores.



Untreated

Treated



Close-up of Treated Core

FIGURE 5

Kansas Hunton core, treated with 15 percent hydrochloric acid. Response to acidizing is similar to that of Viola. Treatment stopped before channels had penetrated. Note loose crystals in close-up.

oil flow through the core by one or more treatments with the proper acids. Generally speaking, it is easier to acidize the type of core which is uniformly permeable and which is taken from strong, consolidated rock. The results from such treatments indicate that the greatest increases are obtained from treatment when the cores have large pores which are partially blocked by small amounts of soluble material (Michigan Dundee, Figure 1).

The cores from the Little Big Sinking Pool, in Kentucky (Figure 2), were of comparatively uniform permeability, with little or no secondary deposition or, in other words, of uniform pore diameter. Acidizing these cores produced no large increases in flow, as was the case with the Michigan Dundee, since the acid was spent in uniformly increasing pore diameters rather than in consuming constricting deposits.

Except that the permeable portion of the Kansas Arbuckle core (Figure 3) was restricted to a narrow oblique streak, its acidizing was similar to the Kentucky and Ohio cores.

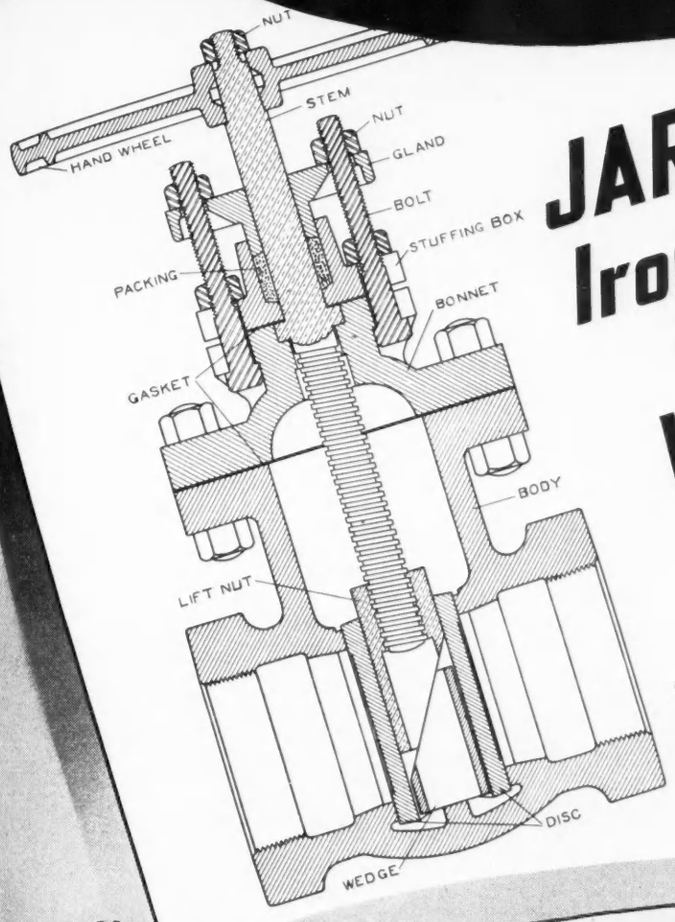
The Niagara dolomite (Figure 4) is similar to the Kentucky core in its response to acidizing, and, being a quarried rock, is included because its availability made possible a large number of treatments for the purpose of comparing the action of the various acids.

The treatment of Hunton and Viola cores (Figures 5 and 6) was a more complex problem because of a mixture of physical and chemical circumstances. The cores are very similar to sand formations in that they consist of small grains of relatively insoluble material cemented together with readily acid-soluble carbonate. They are fairly strong, but are so thinly cemented that they crumble after only a very little cementation is removed by the acid. The cementing material is much more strongly attacked by acid than are the grains and pieces which were laid down in this conglomerate mass.

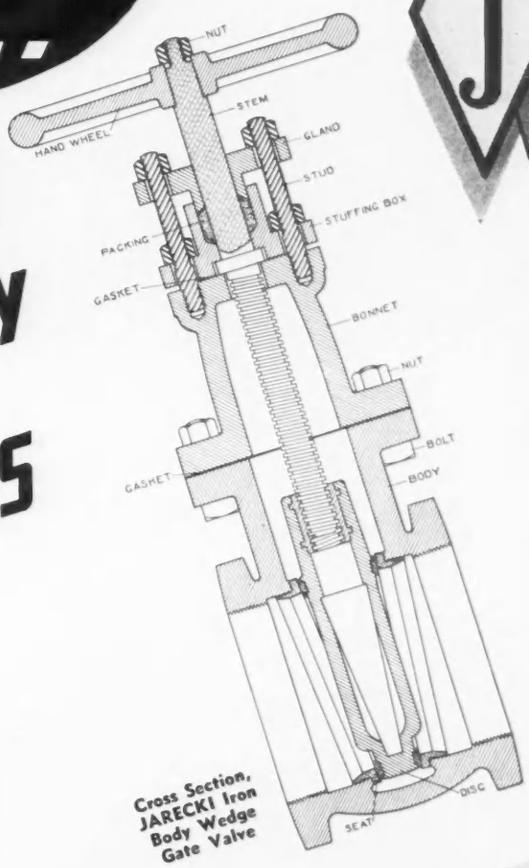
Acid treatment of these cores causes crumbling and

Why ENGINEERS SPECIFY..

JARECKI Iron Body GATE VALVES



Cross Section, JARECKI Iron Body Double-Disc Gate Valve



Cross Section, JARECKI Iron Body Wedge Gate Valve

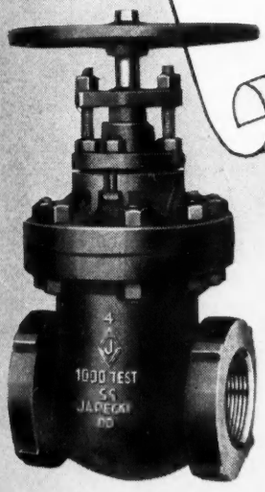


Fig. 1007—JARECKI All Iron Double-Disc Gate Valve, 500 lbs. O. W. G.

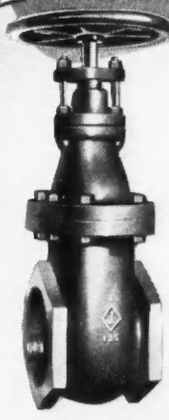


Fig. 395-A—JARECKI Iron Body Wedge Gate Valve, 175 lbs. O.W.G.

Fig. 410-A—JARECKI Iron Body "U"-Clamp Wedge Gate Valve, 225 lbs. O.W.G.

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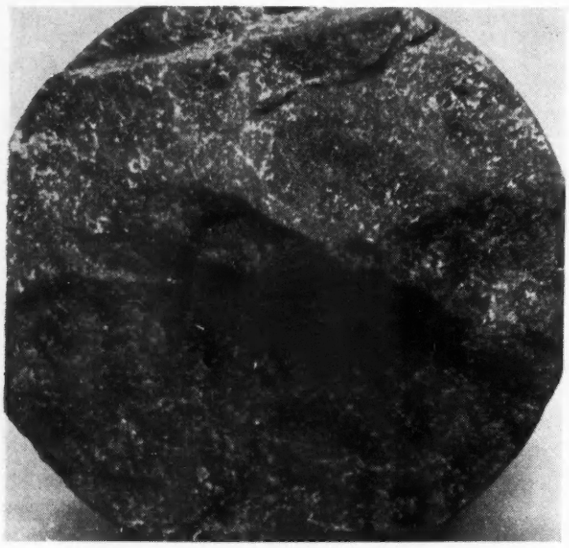
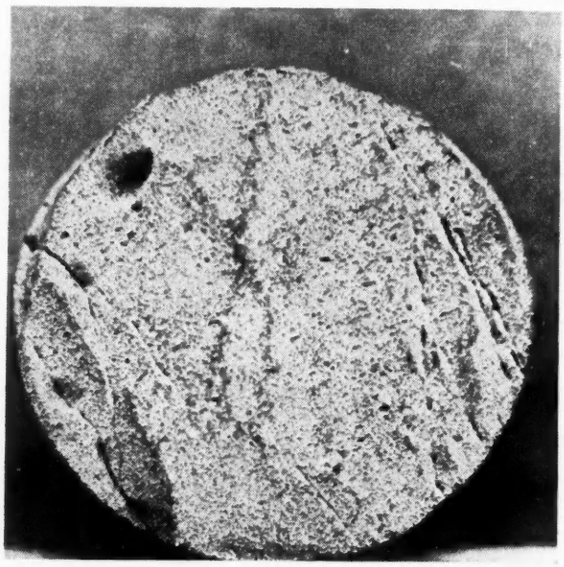


Untreated

Treated



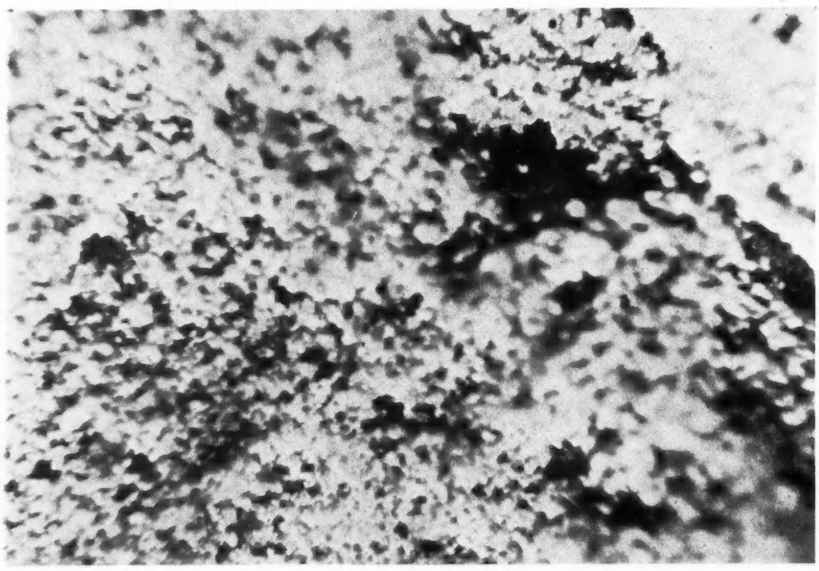


FIGURE 7

Wyoming Madison Lime. Very dense core similar to West Texas Permian, wet with oil but undoubtedly little or no production from this portion of core. Very slow reaction with 15 percent hydrochloric acid and 15 percent energized acid for 1 hour.

Close-up of Treated Core

loosening of crystalline particles which are carried with the acid and produce plugging and back-pressure. This makes it very difficult to force the full charge of acid through the core, and permeability in the direction of treatment is sometimes actually lowered. Back-flow increases the permeability of these cores, and several treatments with back-flow between treatments were found necessary to increase the permeability of these cores without attendant crumbling.

Treatment of the less permeable Madison and Permian cores (Figures 7 and 8) is more difficult, taking about 100 times as long to obtain acid flow through the core and necessitating the use of some agent or other method of lowering the surface tension of the acids. Due to the long time of contact between treating acid and cores, the faces of the cores are deeply eroded by the time the cores are satisfactorily acidized. The final permeability increase of such cores is always large, mainly because acid flow is not possible until channels of a certain size are completed throughout the length of the rock. Because the natural pore sizes and cracks are extremely small in these cores, the carbon dioxide gas bubbles resulting from the action of acid completely block flow before ordinary acid has penetrated the core.

Using 100 pounds per square inch pressure on the upstream side and atmospheric pressure on the down stream side of the core, it was necessary to use a treating solution with a surface tension of about 26 dynes in order to establish flow of acid. Having established flow and a certain minimum permeability, it then becomes possible to force ordinary acid solutions (surface tension of 72 dynes) through the core. Under higher pressure, especially on the downstream side, the surface tension would not need to be lowered as much to obtain flow because of the increased solubility of the carbon dioxide.

Correlation of Core Tests With Field Results

Comparison of the laboratory tests on these cores and the results obtained in the field show enough cor-

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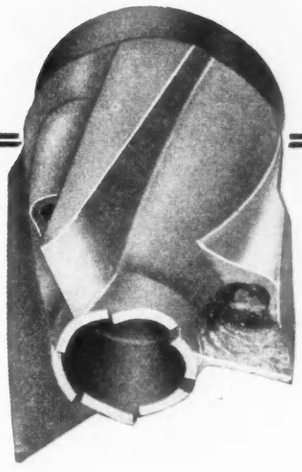

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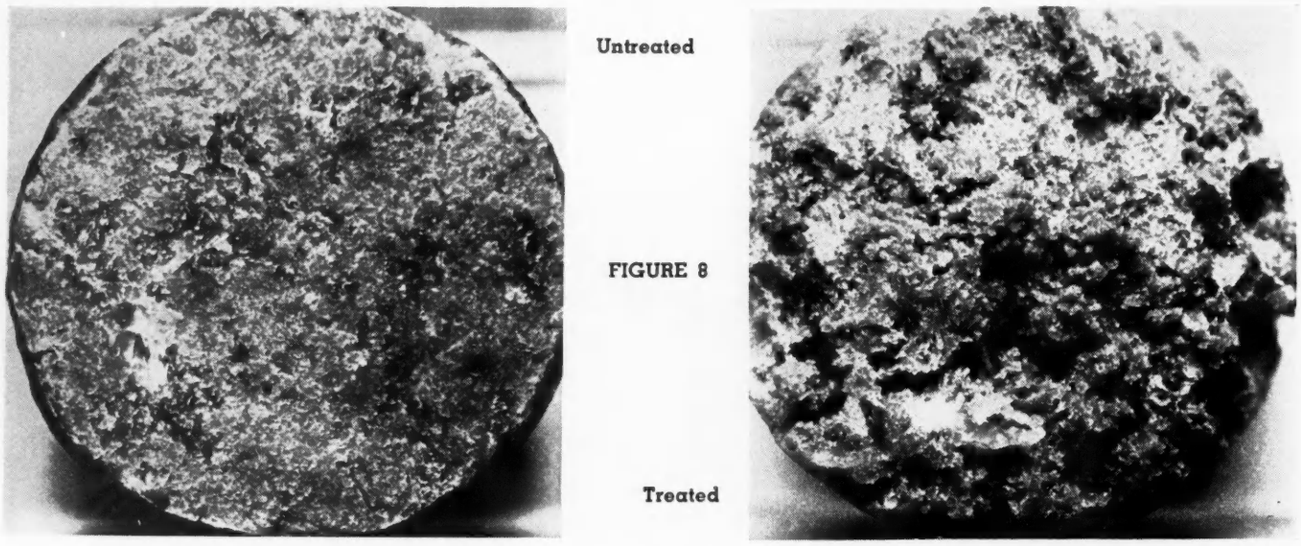

Untreated

FIGURE 8

Treated

West Texas Permian Core. A very dense core in which the acid channeled, especially down through the sides of the core. Original permeability indicates practically no production from this core. Final permeability increase obtained, by channel made through small crack on side of core. Secondary precipitation noticed in spent acid from these cores.

relation to warrant extension of laboratory acidizing to even more detailed investigations.

The Michigan Dundee has always responded well to acidizing and at present gives an average increase in production of more than 900 percent. The type of acid is not of especial importance in the Dundee, because the acid acts rapidly, allowing a quick treatment and minimum shut-down period.

Acidizing in the area around Irvine, Kentucky, gave small increases which, though of commercial value, have seldom been phenomenal. A dozen wells in Lee, Glasgow, LeGrand, and Bowling Green fields averaged 90 percent increase in production one week after treatment.

The Kansas Arbuckle, because of its siliceous nature in Western Kansas, is treated with intensified acid,* usually requiring high pressure. Representative treatments in this field gave 288 percent increase in production.

The Hunton lime, in Kansas, has given increases of around 125 percent. Both the ordinary and the intensified acids are used in this formation. The Viola, in Kansas, has averaged about 420 percent increase in production from acidizing.

Where excessive resistance to flow of acid is encountered it has been found expedient to clean the well and repeat the acidizing in stages until the permeability has been properly increased. These "compound" or "stage," treatments are giving improved results and indicate the value of frequent backwashing, during treatment of such formations.

The Wyoming Madison gives an average increase of approximately 300 percent after acidizing. Intensified acid is used almost exclusively. The uniformity of the field responses indicates that the cores obtained for acidizing tests were not representative of the producing section of the formation.

The Permian formation, in West Texas, varies greatly in porosity and permeability, demanding the use of many different techniques. Many wells can be successfully treated by the usual or "conventional" method, while others require the addition of special agents to the acid. The non-uniformity of permeability encountered has made it necessary to use methods (especially in retreating or in old wells) which prevent loss of acid into unproductive zones and direct it instead into the more impermeable sections containing a store of undrained oil. The "Jelly Seal"† methods of treatment have been used to great advantage in this territory. Here, as in Kansas, wells develop back pressure during treating, and it is found best to treat these wells in several stages with cleaning between each stage. These compound treatments have prevented the accumulation of plugging material in the tight pores of this formation and have resulted in large increases—1000 percent not being unusual. Single-stage treatments given without regard to optimum back-pressures give only 1/10 to 1/5 the increased flow obtained by stage treatments (50-100 percent).

Due to the fact that most of the oil production in Ohio is from wells that have lost practically all the original formation pressure, acidizing has not given the increased production expected from the type of formation producing the oil. Also in Ohio many wells produce from an inter-connected cavernous reservoir not adapted to acidizing.

Effect of Various Well Treating Acids on Niagara Dolomite

To demonstrate the effect of different types of acids it was necessary to use one source of cores, and the Niagara formation in Ohio was selected because a

*An acid containing substances which increase the rate of acid attack on certain limestones and which in many cases leave less residue. (5e)

†Jelly Seal goes in as a fluid, but on reaching the bottom of the well it thickens to a gel which will not penetrate even large pores. Proper use of this gel directs the acid into the producing formation. Bacteria liquefies it in a day or two and it is pumped out of the well.

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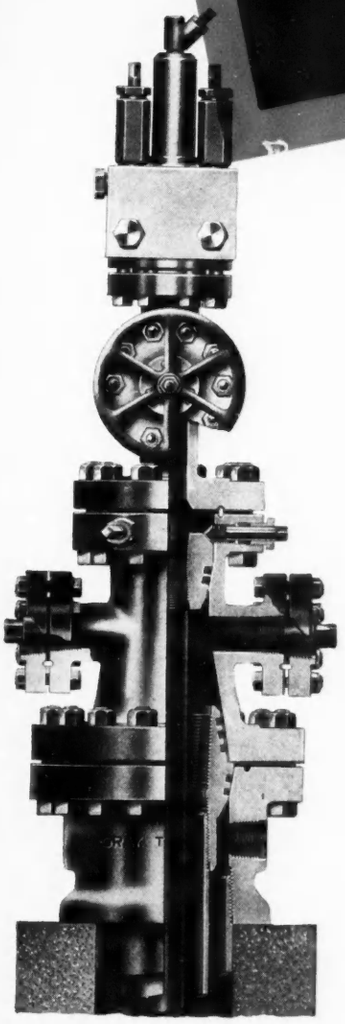

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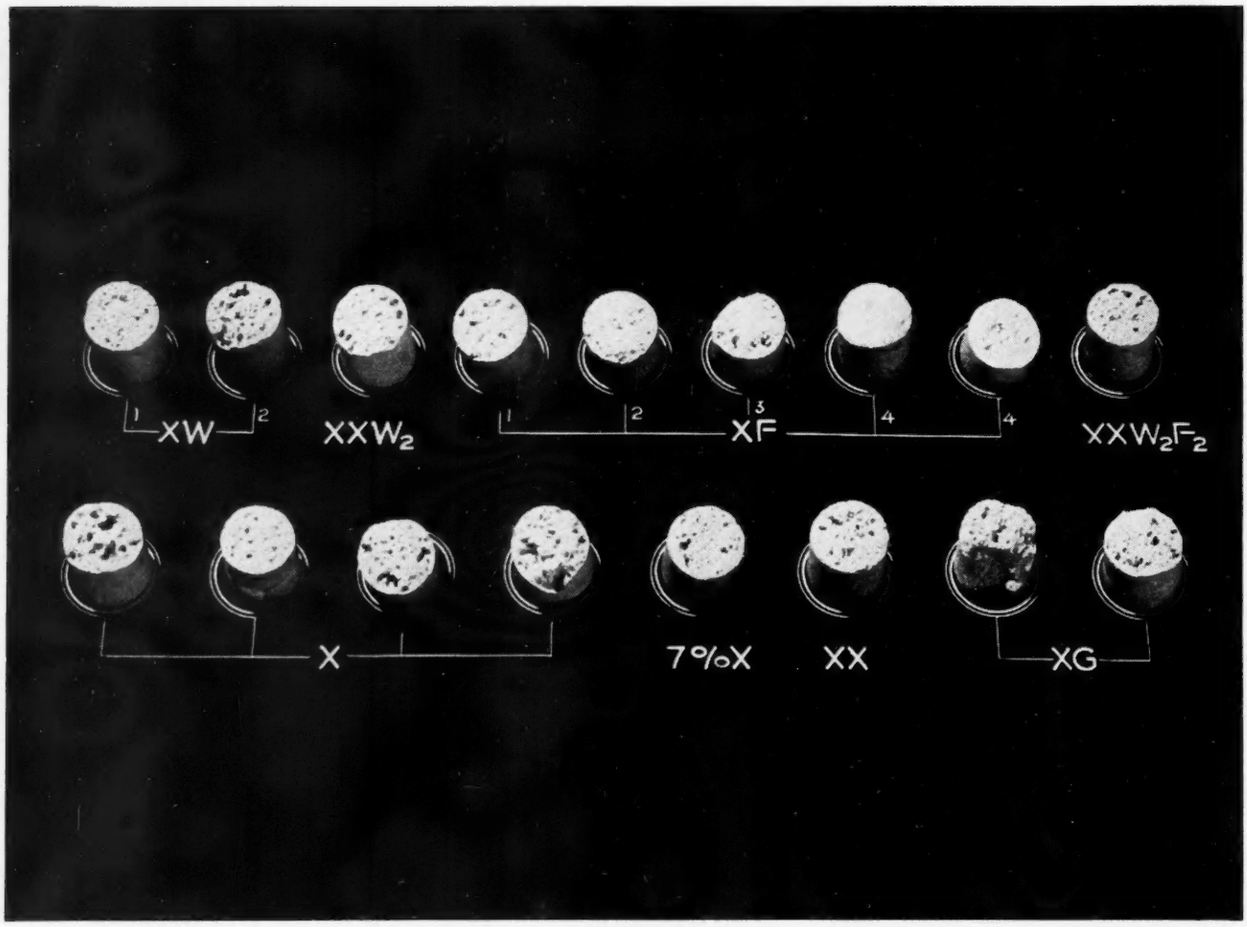

FIGURE 9

A group of Niagara cores after treatment with various acids. By choice of acids it is possible to either create channels deep into the permeable section or open up tight, untapped portions of the oil-saturated rock.

large supply of this permeable material was available (see Figure 9).

Until a large number of check runs are made no detailed discussion will be made, but only the most striking effects will be pointed out at this time.

The most generally observed differences were in the speed of the treatment and in the appearance of the treated cores. Speed of acid penetration was increased by the use of weaker acids and by lowering the surface tension. Cores which were treated with acids to which catalytic agents were added are illustrated in Figure 12 and are designated by XX, XXW_2 and XXW_2F_2. The appearance of the treated cores showed a marked difference when subjected to different treating compounds. Uniform porosity was accomplished when acids, containing agents designated as "F" and "W," were used. With other types of acids some channeling and more selective enlargement of pores was noted.

Deep cavities were made on the face of the cores treated with 15 percent HCl, intensified 15 percent HCl and 15 percent HCl to which a foaming agent had been added, due partly to the channeling and partly to the longer time necessary for acid penetration.

Acidizing engineers must decide from the well history and field experience whether a channel, deep into the formation, through the permeable section or a uniform treatment of all areas of the producing formation will most effectively increase the production of the well. In more or less uniformly porous formations a channeling treatment will most effectively increase the drainage area. Where relatively tight sections exist in the pay, an acid of lower surface tension is indicated to be most desired.

By continuing its policy of exhaustive core testing, the acidizing industry will improve its methods and agents, and its ability to diagnose cause and effect in chemical well treating.

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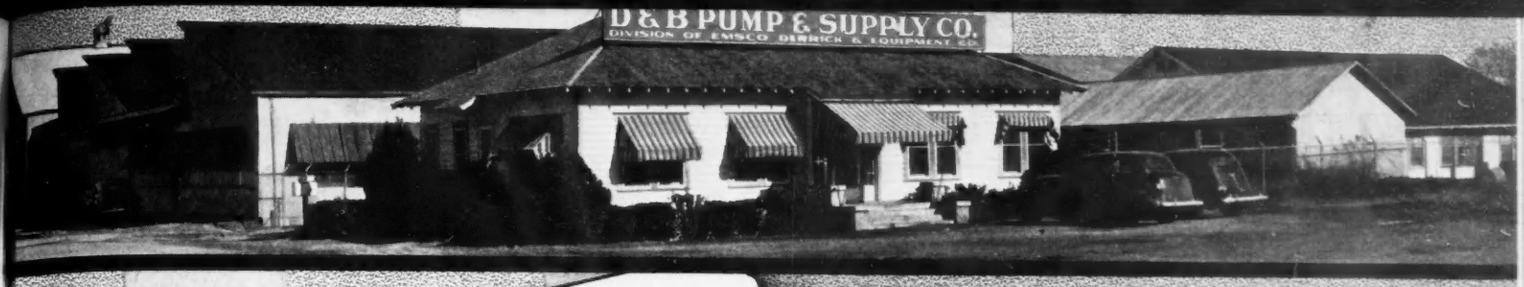

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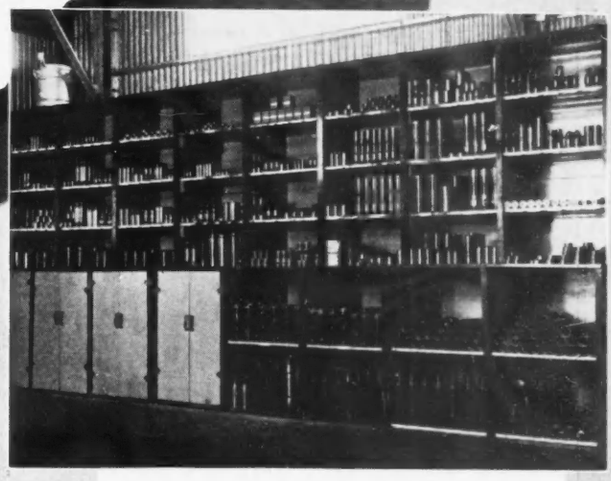

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Squeeze Cementing

Paper presented at the Spring Meeting of the Mid-Continent District, American Petroleum Institute Division of Production, Herring Hotel, Amarillo, Texas, February 17-18, 1938.

By C. P. PARSONS, Vice President
Halliburton Oil Well Cementing Company, Dallas, Texas

SQUEEZE cementing means that cement slurry is forced, or "squeezed", by pressure into or against a permeable formation or through perforations in casing and liners for the purpose of shutting off water or for reducing gas/oil ratios.

Squeezing of cement is old but there have been recent developments in method, technique and cement which are producing remarkable results.

Cement slurry is being squeezed indiscriminately against both the oil bearing and water bearing portions of a producing formation without shutting off any of the oil but shutting off the water.

Cement slurry is being squeezed indiscriminately against both the oil bearing and gas bearing portions of a producing formation without shutting off the oil but shutting off the gas.

In certain areas where new wells produce with an excessive gas/oil ratio, cement slurry is being squeezed against the producing formation before the wells are completed for initial flow.

These uncanny results have not been flukes nor just a few jobs scattered here and there. There have been several thousand jobs during the past year with squeezing pressures up to 5600 pounds per square inch, and averaging around 3000 pounds, without shutting off the oil.

The earliest form of squeezing cement slurry in oil wells was merely to place the slurry through tubing in the bottom portion of a well, then raising the tubing to a safe distance above the slurry and imposing pump pressure on the well. This required moving of the cement slurry after it had been placed and taken a partial set. The squeezing was limited by the increased resistance of the slurry due to its partial set and because the method did not provide for breaking down any film or other obstruction on the face of the formation before the slurry reached the formation. There were also early methods of squeezing through perforations and through leakholes in casing.

Among the developments which lead up to the present form of squeezing are the following:

Better cementing technique.

Better cementing equipment to handle high pressures.

Special cements to set slowly under high temperatures.

Self-sealing fibred cements.

Packers and back pressure valves.

Bridge plugs.

Electrical logging.

Wall scrapers.

Gun perforators.

One of the essential elements in the success of present squeezing is that any obstruction at the face of a formation is first broken down by pumping water or acid into the formation at whatever pressure is necessary to overcome the obstructions.

In most saturated-sand formations, or limes of similar permeability, the pump pressure required to begin movement of water back into a formation is usually higher than is required for continuing the movement. After water once begins moving into a relatively tight formation, the pump pressure usually starts dropping. When it reaches minimum, the necessary amount of cement slurry is mixed and pumped down through the tubing and squeezed against the formation, without stopping the flow. The cement slurry thereby follows the water into the formation and starts building up pump pressure. When this pump pressure reaches a desired maximum the squeeze is complete, but the mechanical equipment must be arranged so there will be no material loss of squeezing pressure while the tubing is being flushed or removed after the squeeze. If pump pressure does not build up during the squeeze, a desirable amount of cement slurry is pumped into the formation and allowed to set. The squeeze is then repeated until the desired maximum pump pressure is obtained.

Squeezing Cement in Open Formation

In wells equipped with casing of suitable strength to handle high pump pressures, the tubing is run to bottom and raised a few inches. The top joint or joints of tubing are externally smooth and flush so that they can work under pressure through the stuffing box in a bradenhead. A valve is installed on top of the tubing to act as a choke. Water is pumped down through the tubing, with the bradenhead and choke open. When the water reaches the bottom of the tubing and some of it goes into the annular space behind the tubing, thereby flushing any loose solids from the face of the formation, the bradenhead is closed and pump pressure applied to the water so that it will enter the formation. When the pressure reaches a minimum the desired amount of cement slurry is mixed and forced down through the tubing and out against the formation, following the water. In wells of low saturation and relatively high permeability the initial pressure may also be the minimum pressure. Some wells of that type may build up pressure rapidly when cement slurry reaches it and others of still higher permeability may even take the cement slurry without a material increase in pressure. Such cases

require special handling and may require self-sealing fibred cement and more than one shot of cement. In the long list of new materials and methods it is possible to make many new combinations to get successful results in many stubborn types of formations.

In wells which are not equipped with casing sufficiently strong to handle the pump pressure, a drillable packing device which contains a back-pressure valve is lowered into the well on the bottom of the tubing and set in the casing just above the casing shoe. Water is then pumped down through the tubing and into the open hole. The formation is broken down by the water under pump pressure and when the minimum pressure is reached the desired amount of cement slurry is mixed and forced against the formation, following the water. The tubing is then flushed and disconnected from the packer, then removed. The back-pressure valve in the packer holds the squeezing pressure.

In wells with limy formations some very successful results are being obtained by placing a shot of acid between the water and the cement slurry. The channels in the lime may be sufficient for free flow of water but the acid enlarges them for the cement slurry to follow more easily and farther into the formation. A special new packer is being used in acid-cement jobs in a highly-permeable lime to separate the water-bearing portion of the lime from the oil-bearing portion. This procedure has produced successful results that were not obtained without the use of acid and packer.

Squeezing Behind Casing and Blank Liners

Squeezing of cement slurry is being done on casing jobs after the ordinary amount of cement slurry is placed behind the casing. This is done by closing the blowout-preventer rams around the casing at the surface and imposing pump pressure to force an additional amount of cement slurry behind the casing.

In squeezing behind blank liners which are run on tubing, a special shoe, equipped with back-pressure valves, is placed on the bottom of the tubing and the female portion of a male-and-female plug is installed at the upper end of the blank liner, just below the backing-off tool. This liner is run to the bottom of the well. The male portion of the male-and-female plug is placed in the top of the tubing ahead of the cement slurry. The slurry is pumped down through the tubing and when the male portion of the plug engages with the female portion the combined plug is forced downward through the liner and actuates the valves in the shoe. The cement slurry is forced out in four directions, assuring complete filling of the annular space. When sufficient cement slurry is pumped out to fill the annular space, a bradenhead is closed at the surface and pump pressure applied to squeeze an additional amount of cement slurry against the formations behind the liner. Production is obtained by selective perforating and squeezing as explained later.

Squeezing Off Gas Before Running Casing

In one area, with a very permeable - lime formation, a large amount of free gas is encountered in the upper portion of the formation, causing a very high gas/oil ratio. It is very desirable to case off this gas but in doing so in regular cementing procedure the cement slurry which is intended to go upward behind the casing goes out into the formation. In completing wells in this area under the new trend of squeezing, the gas-bearing portion is drilled into with a full gauge hole. The hole is reduced at the upper part of the oil-bearing portion of the formation. A tapered wooden plug is then driven into the tapered hole and a squeeze job applied in the gas portion of the formation. When this portion of the formation is cemented off so that it will not take any more cement slurry, the cement is allowed to set and casing is run to the top of the reduced hole and cemented. The squeeze job not only cuts down the gas/oil ratio but prevents a loss of cement slurry when the casing is cemented.

In several sand areas where wells have an excessive gas/oil ratio under regular completion practice, a squeeze job is being done against the open formation before each well is completed for its initial flow, thereby obtaining satisfactory ratios.

Selective Perforating and Squeezing

It has been the practice in some areas to cement casing or a blank liner through a producing formation and then obtain pipe line production with a nominal gas/oil ratio by selective perforating and squeezing.

The use of blank liners and selective squeezing is especially adaptable to wells which are making water from an unknown source, perhaps from an intermediate streak, in the open formations. One area has several streaks of sand in the open hole, one or more of which started making water after the wells had been producing for some time. The exact source of this water was not determined and many previous attempts to shut off the bottom of the hole by regular plug-back procedure failed to reduce the water. Under the new practice the blank liner is first cemented, as already described. After the cement has set, perforations are shot in the lower portion of the blank liner and tested. If they make water, cement slurry is squeezed through the perforations and allowed to set. Another set of perforations is made a little higher up and tested. This is repeated until the maximum amount of pipe line oil is obtained. Whenever any set of perforations produces pipe line oil they are allowed to remain open but if any produce water or excess gas they are squeezed off.

There are some areas where wells ordinarily completed have excessive gas/oil ratios and where heavy ratios of withdrawal cause a rapidly expanding free gas cap that shortens the effective life of a squeeze job in open formation, even though the job may be successful for awhile. In such cases it has been found more effective to set a blank liner and selectively perforate and squeeze. Later, any time the ratio increased a set of perforations could be squeezed.

In another area wells are being completed by drilling a full-gauge hole through the producing formation and then cementing the casing with the shoe at the bottom of the producing formation instead of at the top. Pipe line production is then obtained by selective perforating and squeezing.

There has been a growing tendency in some areas to drill a well completely through all the known producing horizons in the area and then cementing casing through all the horizons with the cement slurry reaching above the most shallow producing horizon. This is done by either single-stage or mul-

tiple-stage cementing, depending upon the height of the upper formation and pressure required to place the cement slurry. When this is done the producing life of the well becomes a series of selective perforating and squeezing. When one producing horizon becomes depleted the perforations are squeezed off and another producing horizon is perforated. When water or excess gas occurs in any one producing horizon they are shut off by selective perforating and squeezing.

The modern form of squeezing has developed in a very short time from a few experimental jobs to approximately 200 jobs per month. Approximately one third of these are in open hole and two thirds are selective squeeze jobs through perforated casing. There is not a single case of a squeeze job, properly done, where the oil-bearing portion of a formation was sealed off, even though the cement slurry was squeezed indiscriminately against oil-, gas- and water-bearing portions of a formation.

In cases where there was no immediate return of oil after the cement was drilled, the oil was obtained either by wall scraping or gun perforating into the open formation.

It must be said, however, that there is no general formula that can be applied indiscriminately in the handling of squeeze jobs. Some of the first jobs in an area have been headaches but were whipped without damage to a well and subsequent squeeze jobs made much easier. An adaptation of the squeeze in a new area with untried conditions should be approached with a background of all the headaches of the past. Adequate equipment should be used to handle high pressures. Special cements which will set slowly under high temperature should be used when high pressures are going to be used in deep wells.

Carefully handled, squeeze cementing has many useful applications. It already has a proven record of success in many hundreds of wells, thereby eliminating the expense and trouble of producing salt water. It also has a fine record of reducing gas/oil ratios in hundreds of other wells, thereby prolonging the natural flowing life of those wells and conserving the invaluable and irreplaceable natural energy.

Crude Reserves

[Continued from page 18]

petroleum in the United States. This is in line with the customary upward revision of reserves in the light of later developments. Thus, a 5,300,000,000 barrel estimate of future production from proven acreage made by the Institute's Committee of Eleven in 1925 was increased to 13,250,000,000 barrels in 1936.

The records show that through December 31, 1936, more than twice as much oil was produced in this country as had been estimated to be available in 1914-1915. Better than 3,000,000,000 barrels more subsequently was produced than was estimated to be available in 1921. The records further disclose that all published estimates made by individuals, by governmental agencies, or by organized committees of the petroleum industry itself, have proved subsequently to have been far within conservative limits.

In closing its report, the committee expressed appreciation for the time and effort contributed by the many petroleum geologists and engineers assisting in the survey, and asserted that the accuracy of the estimate will enable the industry to rely upon present proven reserves in the amount indicated.

In the tabulation attached, Column 1 shows the estimates made by this committee as of January 1, 1937. Revision has increased these estimates to the extent indicated in Column 2. In Column 3 are shown the reserves estimated for fields discovered in 1937. The total of Columns 1, 2, and 3, for each state or region, is shown in Column 4. From this total the amount of crude oil produced in 1937 (Column 5) is subtracted in order to arrive at the estimated reserves as of January 1, 1938, (Column 6).

These estimates represent petroleum which may be extracted by the current methods of production (a) from fields completely developed or drilled up, and (b) from fields not completely developed but sufficiently drilled and explored to permit making a reasonably accurate estimate of reserves. These estimates do not include any allowance for the reserves which may be contained in untested formations or structures.

Although many of the increases in the reserves of oil fields are due to the enlargement of productive areas, changes have also resulted from increased efficiency in development and production methods, which are utilizing to better advantage than heretofore the natural water drive and the lifting force of gas, with decreased waste of energy and therefore increase of recoverable petroleum. There can be no doubt of the immense value of the best modern engineering practice in facilitating recovery and thereby augmenting recoverable reserves.

It took officials of The Texas Company about 10 days to make the water operations in South Louisiana but now since a sea plane has been purchased the time has been cut down to one day.

How Much Crude Reserve Has U. S. S. R.?

By L. DAVID WOSK, Petroleum Engineer

PART 2

MUCH has been written about U. S. S. R. crude reserves. Conclusions have revealed a broad divergence of opinion.

In this series of articles, the first part of which appeared in The OIL WEEKLY of February 21, 1938, the author, L. David Wosk, a petroleum engineer of San Diego, California, gathered his data on fields *in the fields themselves.*

AZERBAIJANIAN FIELDS

The most important area of the Soviet Union, as well as the most important area of pre-revolutionary Russia, is that area within the Republic of Azerbaijan adjacent to the city of Baku on the Caspian Sea. This area is known as the Apsheron Peninsula.

Apsheron Peninsula represents the southeastern plunge of the main Caucasus Mountains, trending northwest-southeast. A series of anticlines, in general fingering out from this main ridge in a prevalent southeastern direction, represents the predominant folding system. It must be noted, however, that in addition to these regular anticlines there are many that seem to have a ring-like tendency, turning back upon themselves and looping into circular or ring-like shapes. This is a most peculiar structural formation and one which the author has never before encountered. It gives rise to a series of anticlinal arches upon a main line of folding around a central structural depression. In addition to this type of ring-like anticlinal fold or regular anticlinal fold, there is the so-called diapir fold (or folds) with a piercing core. These cores are frequently mud volcanoes, many of which are active, carrying considerable quantities of mud, water, gas, and frequently oil, to the surface. An examination of the material brought up shows that this activity extends to great depths. The accompanying map, Figure 12, shows some of these main folded and ring-like structural features, as well as the location of some of the mud volcanoes, the most important being in connection with the development of Lok Batan.

20 Anticlinal Folds

Within the Apsheron Peninsula, there are up to 20 anticlinal folds. Eight of these, situated in the northwestern part of the peninsula, are of very complicated types. In the eastern part, the folds turn to the south from the main Caucasian trend and form their peculiar ring shape turnings. It is in this area that the principal oil fields of Azerbaijan are located. The most important ring fold, commercially speaking, is the Bolokhany-Sabunchy-Surakhany-Zykh. It is believed by some geologists that this same line continues to Peschany Island, through the series of islands to Bibi-Eibat, thence north to Shubany, thence east to Sulu Tepe, through Binagady connecting to Bolokhany, forming a complete ring.

Another great, commercially important, ring-like uplift is traced through Kown Mountain, Bozdakg, Shaban Dag Mountain, Lok Batan Volcano, Puta Oil field, Kergez and Kyzyl Tepe. It is noted that if the first premise of a complete ring fold is held, then this must constitute a split or branch. This, while not as important as the first line, is nevertheless important.

Other Lines of Faulting

East of Bolokhany, another line of folding, on which the Kala field is located, appears. Further east and northeast, within the Caspian Sea, adjacent to the peninsula, is still another line of foldings, including the productive Artem Island and a large structure under the sea northwest of Artem Island, called Mardakiany. This structure is clearly evidenced by rims or reefs of rocks of the Productive formation, encircling both flanks. It is important to note the presence of mud volcanoes in direct association with the axial line of these

various anticlines. In all probability, the connection can be traced to fissures at points of weakness caused by sharp bending of the line of fold.

The depth of the lower Jurassic under Baku is estimated at approximately 10,000 meters. These lower Jurassic shales, over 5000 meters thick, contain gas and shows of oil in certain areas of the Caucasus. The upper Jurassic, chiefly limestone, also has shows. The lower Cretaceous, composed predominantly of shales and sands, as well as the upper Cretaceous, composed of limestones, evidence non-commercial shows of oil. The Eocene Tertiary, being flysh facies, have also shown non-commercial traces of oil.

The lower Miocene-Maikop series, which locally, are not yet productive, not having been tested in the Apsheron Peninsula, are productive to the west where they reach their best and thickest development. Their presence in the Apsheron Peninsula is evidenced by fragments brought up in mud volcanoes and also in narrow bands on diapir cores. The middle and upper Miocene beds are a diatomaceous, deep water facies in which massive shales predominate.

The "Productive" Formation

The "Productive" section of the Pliocene, containing over 50 producing beds and wells up to 20,000 tons per day initial, is the most important. Above the Productive formation, the upper Pliocene contains the important Akchaghylian and Apsheronian stage, consisting largely of sands and shales that offer local possibilities where not too deeply eroded. Above this lies the post Pliocene, ancient Caspian beds, which are the youngest beds exposed, with the exception of recent deposits. In the above mentioned 10,000 meters of sediments the Jurassic equals 6000, lower Cretaceous 1000 to 1500 meters, upper Cretaceous 1000 to 2000, Pliocene 2000, and the balance approximately 1000 meters.

Production in this area is confined chiefly to what is known locally as the "Productive" formation of Pliocene age. The accompanying geological section shows this position with respect to other formations which will be mentioned from time to time.

This Productive formation consists of three divisions and further subdivisions into beds based upon their lithological character. A thorough understanding of this is necessary to determine the deeper possibilities of the present producing fields as well as the possibilities in the known structures of the Apsheron peninsula. Following is the subdivision of the Productive formation, to which frequent reference will be made:

	Average thickness in meters
I—Upper Division	
(a) Surakhany beds.	340- 400
(b) Sabunchy beds..	290- 300
(c) Balakhany beds.	390- 460
II—Middle Division:	
(d) Sandy pebble beds of the "break"	100
III—Lower Division:	
(e) Sandy argillaceous Overkirmaku beds	36- 40
(f) Sand Overkirmaku beds	40
(g) Kirmaku beds and Subkirmaku beds	320- 340
Total....	1500-1600

Special mention will be made as to the percentage of saturated sand section within this formation in various pools. The tremendous thickness of this section (4500-4800 ft.) should be kept in mind when considering the potentialities of this area.

Lithological Character

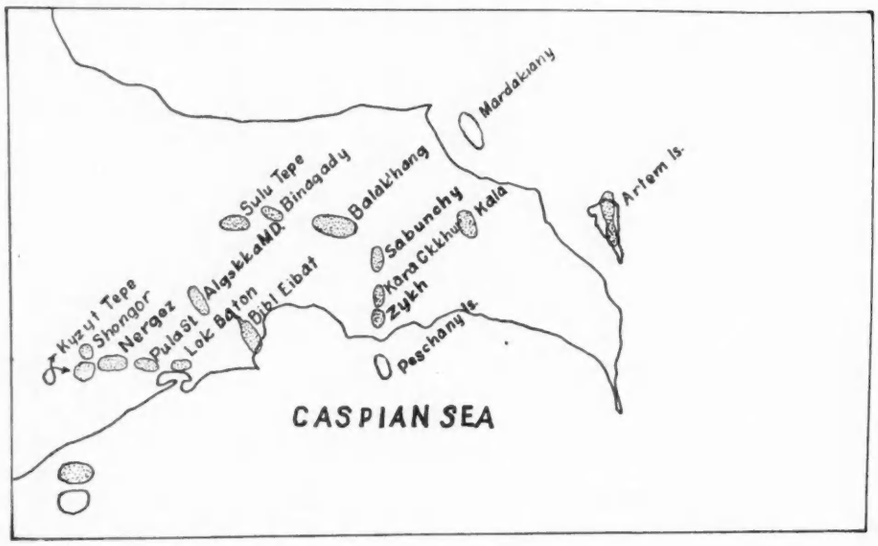
In the main, the lithological character of these beds is as follows: the Subkirmaku and Kirmaku are made up of alternating beds of fine, coarse-grained sands and clays; the Overkirmaku beds are formed by intercalations of clays and sands, the latter being predominant and grading upward into clays. The middle division is characterized by coarse-grained sands and sandstones with conglomerates frequently encountered, clay beds being rare. The Balakhany beds are made up of sands and clays, the latter being predominant. The Sabunchy and Surakhany beds are composed also of sands and clays interbedded, the sands being very fine grained.

The Productive formation rapidly thins approaching the mountains, while to the east and south it grows in thickness. The upper Surakhany beds are of special interest from this standpoint, thickening rapidly from Balakhany to Zykh, and also from Atashka to Kergez. As the thickness increases, the clay content increases and the percentage of sand decreases. However, in many instances, the decrease in percentage is compensated for by an increased thickness, accounting for a huge saturated sand section.

Origin Not Determined

The origin of the important Productive series has not been accurately determined. It is generally believed to be a continental formation, although many believe it to be a delta deposit carried down by the Kura River. Its geographical origin is commonly believed to be the Caucasus Mountains. To offset this belief, however, the fauna found is fresh water. Mud volcanoes are outstanding features of the landscape, some being more than 300 meters high. Structures

FIGURE 12
Tectonic map of Apsheron Peninsula.
Producing areas are dotted; prospected areas are blank.



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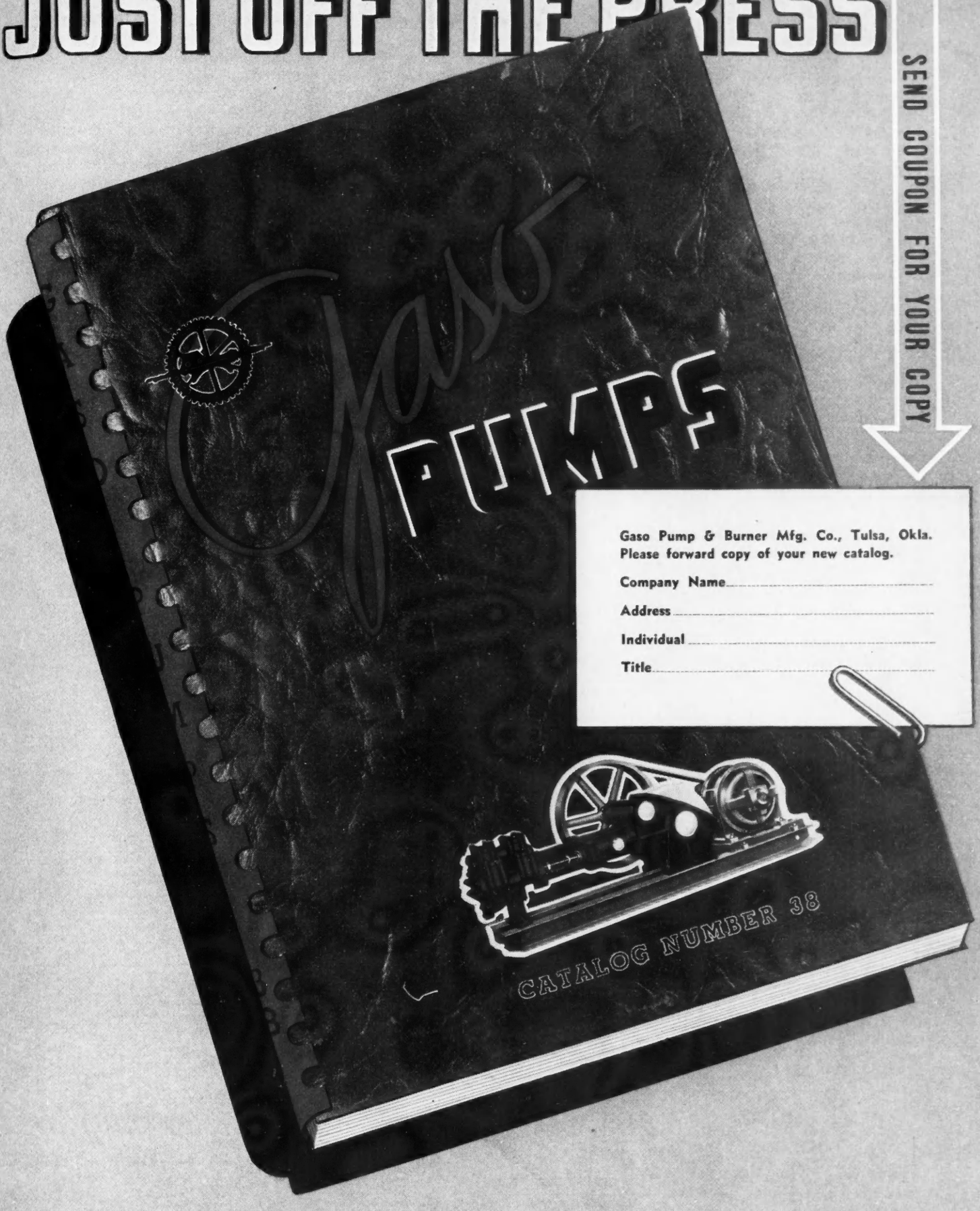

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under the sea, at shallow depths, are easily observed by outcrops forming rings of reefs, marking both the shape and size. Other interesting topographic features are the Solanchaks (salt marshes and salt lakes) formed due to the accumulation of salt, leached by atmospheric water, obtained from the clay beds. Wind erosion scoops these depressions deeper, in places giving rise to weird topographic features unlike any the author has observed in the United States.

The age of the folding of this area has in the past been considered to be middle and upper Pliocene. Recent studies, however, indicate that it may be much older. Faulting accompanies the folding in nearly every instance and is considered to be of the same age and in some instances younger.

The folding of most structures in the Apsheron Peninsula is asymetrical and is further complicated by faulting and pinching out of beds in diapirs and mud volcanoes, giving rise to rapid changes of formation thicknesses. A great deal of credit must be given to the Soviet geologists for their work in this most difficult area.

Prior to 1927, production of oil in the Apsheron Peninsula was confined to six areas as follows: Balakhany - Sabunchy - Ramany, Surakhany, Bibi Eibat, Binagady, Artem Island, and Shubany. Subsequent to that date, eight additional areas have been added as follows: Kara Chkhur (1928), Puta (1925), Lok Batan (1933), Sulu Tepe (1933), Kala (1932), Kergez (1929), Zykh (1935), and Kyzyl Tepe (1936). In addition to these, some of which are small in area and relatively unimportant, fields have been discovered in the Kura plains area, the most notable of which is Pirsagat (1936).

350 Untested Structures

There are in the Apsheron Peninsula 350 untested structures, which makes the area the most potentially productive in the Soviet Union. Geo-tectonically as well as geographically, Azerbaijan is subdivided into three parts, namely the mountanious system of the main Caucasus ridge, the small Caucasus, and the tectonic depression of the Kura plain lying between and separating the other two. The oil fields of Azerbaijan are confined to the southeastern termination of the main Caucasus ridge and the Kura plain. In the first of these (Main Caucasus Ridge), we can distinguish four main productive zones:

I. Caspian zone. It includes oil fields which contain oil in Miocene and Paleogene deposits (chiefly in the Maikop beds.) Besides anticlinal structures, oil is produced from the zone of the overthrust of Cretaceous upon Tertiary deposits.

II. Northern Kabristanian zone. Oil is found in Cretaceous deposits, the structure being both of anticlinal and thrust types.

III. Shemakha - Kabristanian zone (Shemakha region and central Kabristan.) As in the first zone, oil is produced from the Paleogene and Miocene, anticlinal

FIGURE 13

SUMMARIZED TABLE OF TERTIARY DEPOSITS OF THE NORTH-EASTERN CAUCASUS

Division	Subdivision	Stage	Substage	Horizon	International designation	Local subdivisions	Local designation	Guide fossils	Lithologic composition of rocks in the Tersky–Sunja region	Thickness in m	Lithologic composition of rocks in Daghestan	Thickness in m
OROGENIC PHASE. SHAPING OF THE RELIEF OF THE NORTH-EASTERN FORE-CAUCASUS												
NEOGENE	PLIOCENE	Apsheronian			m_4^{ap}		Aps.	*Apscheronia*	Sands, sandstones, clays, pebbles, conglomerates with volcanic material	250	Sands, sandstones, pebbles, conglomerates	to 200 m
BREAK IN DEPOSITION IN DAGHESTAN INTENSIVE VERTICAL DISPLACEMENT OF MASSES RESULTING IN THE FORMATION OF MOUNTAINS												
		Akchagylian			m_4^{ak}		Akch	*Cardium dombra, Mactra subcaspia*	Clays, sands, shell limestones, conglomerates, pebbles	About 400 m.	Conglomerates, clays, sands, limestones, shell limestones,	to 400 m
		Pontian			m_4^{1}		Pt	*Parvivenus wildhalmi Monodacna pseudocatillus*	Friable sandstones, clays		Absent	
PONTIAN AND MAEOTIC LOCALLY DEVELOPED. BREAK IN DEPOSITION. MAIN PHASE OF FOLDING												
		Maeotic			m_3^{ma}		Mt	*Syndesmia tellinoides Congeria nomorassica*	Clays, sands, sandstones, oolitic limestones, sometimes shell limestones	0–800	Present only in Sulak region	
	Upper	Sarmatian	Upper		m_3^{s}	Beds with *Helix*	Srm$_3^3$	*Helix*	Clays, sandstones, locally replaced by sandy clays, sandstones, conglomerates	To 500 m. 400–550	Limestones, shell limestones, clays, sands, sometimes pure clays	to 600
						Beds with *Mactra caspia* / Beds with *Mactra crassicolis*		*Mactra caspia* / *Mactra crassicolis*				
					m_3^{s}	Deep-water facies—Grozny beds / Shallow-water facies—Beds with *Mactra navicularata*	Srm$_3^2$	*Mactra* sp. *Ostracoda* / *Mactra naviculata*	Clays with interbeds of marls	120–250	Limestones, shell limestones, clays, sands	50–500
			Middle		m_3^{s}	Cryptomactra beds / Beds with *Cardium fittoni*	Srm$_2$	*Cryptomactra pes anseris* / *Cardium fittoni*	Calcareous clays with interbeds of marls	170–350	Clays with interbeds of marls. Sometimes with interbeds of sands	400–800
			Lower		m_3^{s}	Beds with *Mactra eichwaldi*	Srm$_1^2$	*Mactra eichwaldi*	Clays with interbeds of soft marls	50–120	Clays with rare interbeds of marls	150–300
					m_3^{s}	Syndesmia beds	Srm$_1^1$	*Syndesmia reflexa*	Clays with numerous interbeds of hard marls		Clays with numerous interbeds of hard marls	50–80
	Middle	Second Mediterranean		Konka	m_2^{k}	Spanidontella beds	Spn	*Spirialis, Spanidontella*	Clays with interbeds of marls	15–30	Clays with thin interbeds of sandstones and marls	10–50
				Karagan	m_2^{k}			*Spanidontella*	Alternation of clays, sandstone beds and marls	200–370	Clays with strata of sandstones and marls	250–370
				Chokrak	m_2^{ch}	Chokrak-Spirialis beds	Spc	*Spirialis, Syndesmia alba and others*	Clays with two beds of sandstones and three typical interbeds of marls with *Spirialis*	8–40	Clays with three interbeds of marls with *Spirialis*, "Conglomerate" and Ghiaurtepe sandstone with fauna	30–35
									Clays alternating with sandstone and marls	90–120	Sandy clayey formation sometimes with the predominance of sandstones. In South Daghestan sandstones occur but in the upper part	700–1100 on the south 200–700
									Clays with interbeds of marls	80–200		
	Lower	First Mediterranean		Tarkhan	m_2^{t}			*Amussium denudatum*	Thin bedded clays with ball-like concretions of marls. The interbed of marls with fauna at the base	to 40 m	Thin bedded clays with ball-like concretions of marls. Interbed of marls with fauna at the base	20–50
PALEOGENE	OLIGOCENE				m_{2-3}	Upper Maikop beds / Suramakent horizon	Mkp$_3^2$	Fish remains	Clays with sideritic concretions	250–900	Clays with sideritic concretions	150–600
						Riki	Mkp$_3^1$		Clays with concretions of marls and thin interbeds of sandstones. The horizon with interbeds of septarian concretions at the base		Clays with septarian concretions of marls and thin sandstones (North Daghestan)	
						LOCAL UNCONFORMITY						
						Lower Maikop beds / Mutzidakal horizon	Mkp$_2^3$	Fish remains	Clays with thin interbeds of compact sandstones	0–600	The section similar to that of the Tersky Sunja region (North Daghestan)	900–1100
						Lower clayey horizon	Mkp$_2^2$		Clays			
						Mutty horizon	Mkp$_2^1$		Clays with interbeds and lenses of sandstones and block inclusions of Foraminifera and Khadum rocks			
									Clays with sideritic concretions in the upper part and thin interbeds of sandstones (South Daghestan 100–200 m.)			
						LOCAL INGRESSIVE BEDDING						
					m_2	Khadum beds	Ch	Fish remains, *Foraminifera*	Shaly clays with interbeds of marls	15–50	Shaly clays with interbeds of marls	15–390 m
	EOCENE				m_{1-2}	Foramin fera beds	F_3	*Foraminifera, Pelecypoda, Gastropoda*	Greenish and white marls	90–100	Greenish white marls	200–100
							F_2	*Lyrolepis caucasica* Roman	Brownish bituminous clayey, marly shales		Brown bituminous clayey marly shales	15–70
											Local unconformity	
	Danicun?						F_1	*Foraminifera*	Green marls. Variegated series of marls		Green marls. Variegated beds of marls	0–170
LOCAL UNCONFORMITY												
UPPER CRETACEOUS												

structures being sometime "sealed" by unconformities in the western part of the region.

IV. Apsheron - Kabristanian zone (the Apsheron Peninsula of the Eastern Kabristan.) Main oil resources are confined to the so-called Productive formation (Pliocene), dislocated into a series of brachianticlinal (double plunging anticlinal) folds.

The second (Small Caucasus) is to date non-productive and not adequately explored.

The third (the Kura Plains) also includes four zones:

I. Western Kura zone. The section of Neogene is characterized by abundant pebble deposits. Presence of oil is ascribed to the Shirakian, Sarmatian and Maikop beds. Structures are represented by elongated anticlines.

II. Eastern Kura zone. As in the fourth zone, (Apsheron-Kabristanian), the presence of oil is associated with the Productive formation. Brachianticlinal folds are dislocated by faults.

The I and II zones are separated by the Kurdamir belt of positive gravity anomalies.

III. Kirovabad - Naphtalanian zone (northeastern foothills of the Small Caucasus.) Oil is found in the Maikop beds represented by small dome-shaped folds oriented in north-northeastern, south-southwestern direction.

IV. Fore-Talyshyan zone. Oil is found in the Miocene and probably Maikop beds thrown into long anticlinal folds disturbed by great longitudinal dislocations.

The last two zones are somewhat related to the third geo-tectonical unit of Azerbaijan, namely to the system of the small Caucasus.

Only the more important of the fields of these districts will be discussed briefly.

I. Shubany Oil Field

Shubany field represents a brachianticlinal fold up to 8 kilometers in length, on the axis of the Kown-Boz Dag - Puta anticline. Both flanks of the fold dip very steeply from 45 to 70 degrees. Only on the southern and northern dips, are angles as low as 15 to 25 degrees recorded. The productive series is approximately 50 percent sand and 50 percent shale. The steeply-dipping productive beds, outcropped and eroded at the surface, are sealed by tar contents. The first production was developed by hand dug pits, which, in 1910 were replaced by drilled wells. The oils are heavy, the specific gravity being .915-.925. To January, 1936, the total production has been 649,-900 tons of oil. The old wells are virtually depleted, and Shubany is being prospected for deeper production. The difficulty of finding the lower parts of the Productive formation is due to the diapir phenomena—squeezing out many intervening beds. Three wells are at present attempting to tie in the Shubany and Lok Batan fields.

II. Lok Batan (Mikoyan Oil Field)

Lok Batan oil field, which is a ring-like field surrounding the mud volcano of the same name, is one of the most interesting fields in the entire district and one of the most thoroughly studied of the southeastern Caucasus. The beds of the Productive formation dip east near Bibi-Eibat and rise when approaching Lok Batan. The summit of this volcano is 100 meters above the surrounding plain. Gas seeps are found in the crater, and it was these gas seeps that led to the discovery of the pool. There are eight horizons and many sub-horizons containing oil. These range down to the Kirmaku and include the Overkirmaku. Approximately 40 percent of the productive section is sand and 60 percent shale. The Overkirmaku beds here are, however, very thick, giving rise to a thick sand section. On the arch of the fold, the Productive formation is eroded to a depth of 500 to 550 meters. The flanks dip steeply, ranging from 15 to 65 degrees. Thrust faulting, with resultant duplication of producing horizons, has complicated the structure but increased the productivity.

Lok Batan oils resemble those of Bibi-Eibat. The specific gravity ranges from .890 in horizon No. 5 to .926 in horizon No. 8. In 1935, the most productive horizons, Nos. 8 and 8A, were discovered. Extensive development is being carried on and a continuous line of production from Lok Batan to Puta field is assured. In addition to the possibility of extended production areas, the lower part of the Kirmaku and the sub-Kirmaku are expected to be productive. They have not been tested adequately.

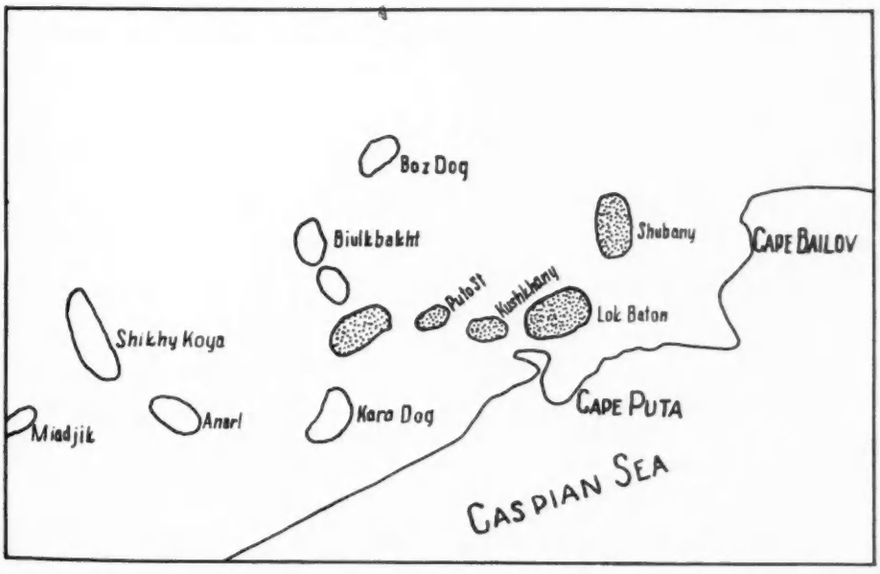
Flow Three Months

Spacing in Lok Batan runs from 125-150 meters in each horizon with many twinned wells. The casing head pressure in horizons 6, 7 and 8 is approximately 20-30 atmospheres. The gas/oil ratio is 200 cubic meters per ton. While edge-water has been found, no bottom water has yet been found and no water is being produced. In horizons 1 to 7 inclusive, wells are pumping. In horizon No. 8 wells are flowing. However, on the south limb, air lift is being used. There

FIGURE 15

Tectonic map of Western Apsheron and Eastern Kabristan (after I. Gubkin) and new data of Aznefterazvedka Trust.

Producing areas are dotted; prospected areas are blank.



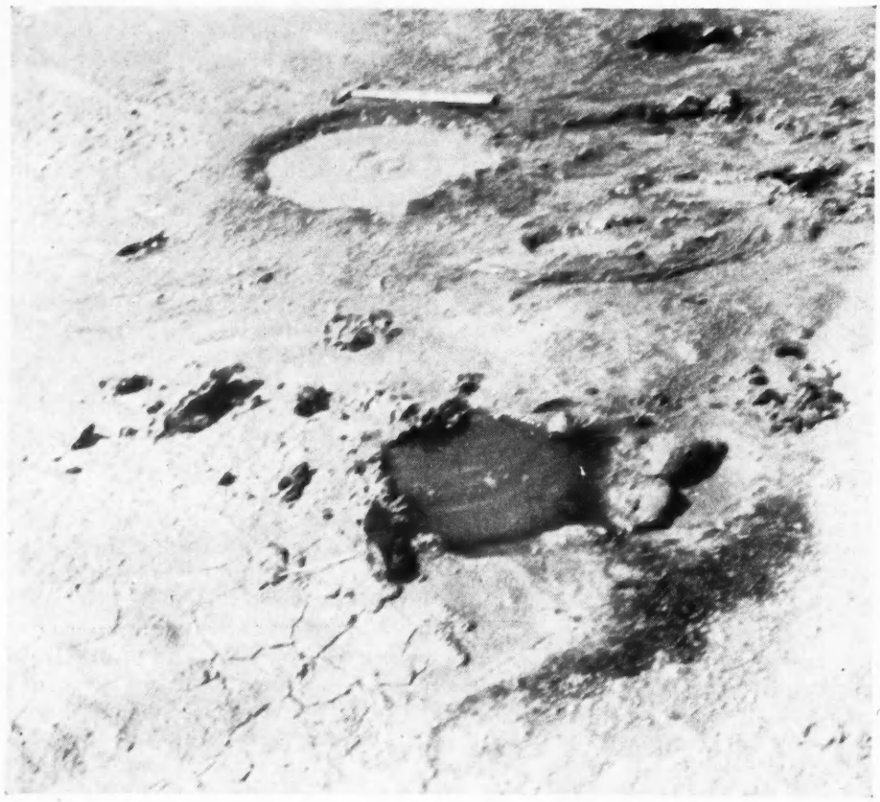


FIGURE 14
Oil and gas seeps near Baku

are 25 flowing wells, said to be making 200-300 tons per day each, on a choke 13-15 milimeters. It is interesting to note that on the overthrust portion on the north, horizon No. 8 has very low gravity oil, whereas the same horizon on the south limb has high gravity, .870, paraffin base oil. The wells flow three or four months and are then put on lift. Electrical pumping and rotary drilling units are used throughout.

The geology is difficult and the working out of this structure is a noteworthy task. There seems to be no standardized production method used in the field. This is due largely to the various types of oil encountered in numerous horizons, etc. In the main, well spacing is too close, and insufficient use of back pressures has been made. Drilling equipment is unnecessarily heavy and expensive.

III. Puta (Molotov Oil Field)

Puta oil field, which is on an extension of the same anticlinal fold as Lok Batan, is but a short distance therefrom. Connecting wells now being drilled probably will prove the intervening area productive. The Productive formation is here eroded to a depth of 600 meters. It is approximately 40 percent sand and 60 percent shale, as at Lok Batan. The limbs of the anticline are somewhat flatter, being from 15-30 degrees. The structure is complexly faulted, with a sunken wedge in the center. There are nine producing horizons and sub-horizons, No. 8 having been recently opened. Most oil is heavy, running from .907 to .916, although the recently discovered horizon has a gravity of .843. The field was opened in June, 1926, with a discovery well making 200 tons a day. The upper horizons are gas bearing, while the lower horizons have no gas cap. This field is but partially developed and the greatest area in the central and western parts are yet in the stage of prospecting. What has been said regarding the twinning of wells for Lok Batan can be said for this pool also. Throughout this entire district, large, heavy type wooden derricks are being used. Drilling equipment is of Soviet make. Rotary drilling was used throughout as was electrical pumping. The newer portions of the field showed evidences of better drilling technique, such as automatic weight indicators, etc. The older portions, however, showed a lack of knowledge of such methods.

IV. Kergez-Kyzyl Tepe Oil Field

Kergez-Kyzyl Tepe oil field is situated three kilometers west of Puta on the same line of folding, separated by the Kush Kahna mud volcano. The Productive formation is eroded to a depth of 600 meters. The clay content increases somewhat over that of Puta, and the beds thicken to more or less compensate for this. Beds 4, 5, 5A, 5B of the Puta field carry through into this field. However horizons 6, 7 and 7A, which are the most productive of the Puta oil field sands, have been replaced in this field by clays. The structure is an elongated, contorted, brachianticline. The flanks are steep dipping and in some places overtuned. Horizons 4 and 5 are the main horizons; the gravity of the oil is .870 and .925, respectively. The wells are usually small, yielding about 600 tons per month. In the western portion near the Kyzyl Tepe volcano, large wells have been found, one well having yielded up to 450 tons per day. From 1929 to June, 1937, the yield in this pool has been about 223,000 tons of oil.

There seems to be a split in the axis of the anticline at the western edge of the pool. One branch turns north to the Shongar pool, and the other southwest to the Kara Dag.

V. Shongar Oil Field

Shongar area surrounds three mud volcanoes Shongar, Saryncha and Guilbakht. This area was opened to production in 1936, with a well flowing at the rate of 2000 tons per day from horizon 5 of the Puta nomenclature. The author observed six drilling wells in this area. Neither the areal nor stratographic extent have yet been determined. It is believed that these areas will be small and relatively unimportant, although this cannot be made as a positive statement. The lower horizons may be, because of their geographic position, more sandy than those of Puta, in which event they will be of extreme importance.

VI. Saryncha-Guilbakht

This area is on the northward continuation of the Shongar branch of the anticline discussed above. Faulting has complicated this structure to a great extent. On the southeast part of the structure the

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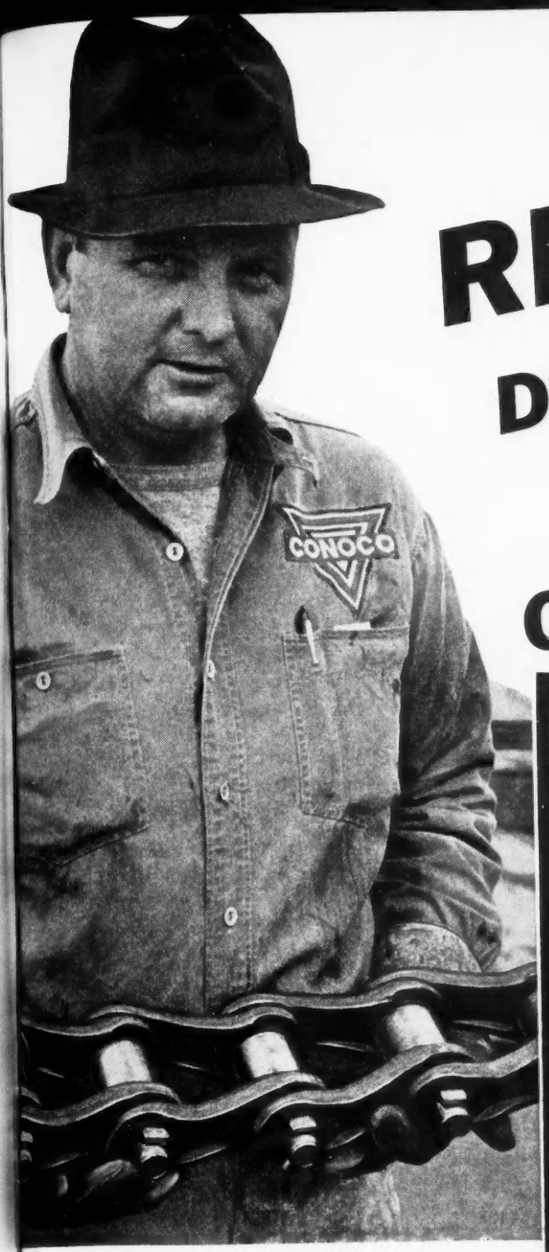

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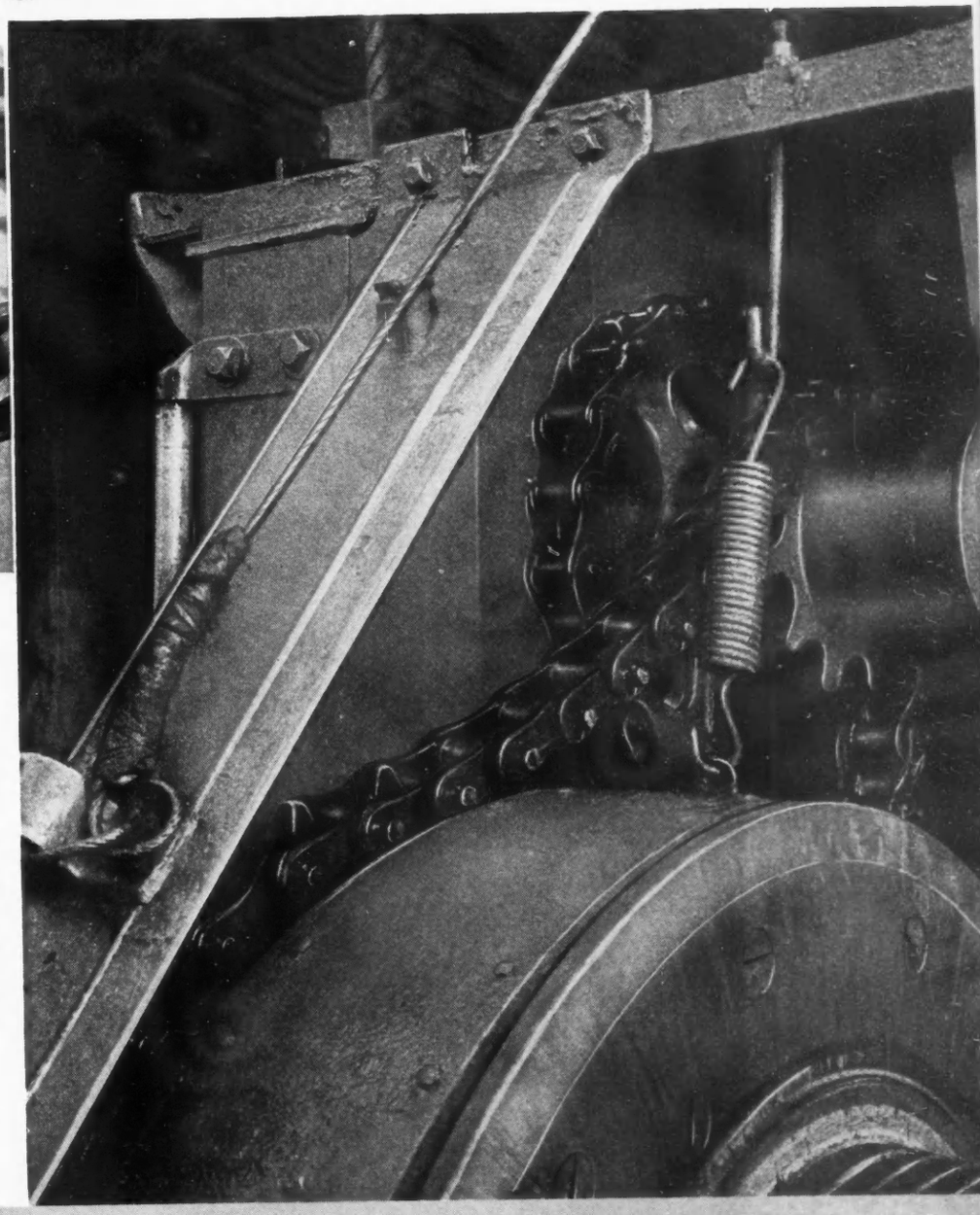

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Productive formation is eroded to 570 meters at one point and 1070 at another. On the northeast limb the erosion reaches down to 1280 meters. On the other limbs and the central portion, erosion is much less. Abundant oil and gas seeps are present on and near the mud volcanoes in this area. Commercial production has not yet been obtained, although with additional exploitation it is reasonable to assume that it may be found. The extent and importance of this area, in the opinion of the author, will be relatively small.

Probability of increased production on the other branch of the split anticline is good, although the increased shale content in the Productive formations may limit the size of wells materially. This line of folding runs down into the Kura Valley and will be discussed separately.

VII. Sulu Tepe Oil Field

Sulu Tepe field is situated due north of Baku about 10 kilometers. It is on the main ring-like line of folding of the area and is considered the most westerly pool of this line. There are approximately 80 wells in Sulu Tepe, mostly steel derricks, mostly pumping as near as could be observed, and using electrical pumping units throughout. The fold is a diapir type, the exposed core being Miocene beds. Flank dips are from 30 to 50 degrees. Oil is confined to 7 horizons, all being in the Kirmaku beds. Of these, three are commercially important. Gravity of the oil ranges from .880 to .915. The wells are relatively small, producing only 300-450 tons per well per month. Exploitation commenced in 1933 and is concentrated on the eastern and southern limbs of the fold. The northern and western limbs are being explored, with the possibilities of opening production considered good. In this field and in those further east, the Productive series is approximately 75 percent sand and 25 percent shale. The lower horizons, namely the sub-Kirmaku beds, which, due to the diapir process, are probably squeezed out near the arch, are considered excellent possibilities when located. Production from Sulu Tepe has been about 170,000 tons of oil. A remarkable recovery in this field is claimed, 70 percent. This is based upon an examination of cores of the flooded, formerly productive sands. These show that the oil occupying the pore spaces in the formerly saturated sands has been replaced by water, 70 percent.

FIGURE 16
Drilling to Cretaceous near Baku

Seeps Numerous

The line of folding runs eastward to the Zyghyl Piri Mountain, a mud volcano around the rims of which there is a continuous ring of Productive formations. Here numerous seeps of oil and gas may be observed. East of this mountain the Overkirmaku and Kirmaku beds, impregnated and sealed at their outcrops with tar, are exposed. Still further east, not far from Binagady, another large mud volcano is discernible. Here again the lower Productive series outcrops on the surface, the beds being sealed by tar. Away from the outcrop, a short distance, wells drilled to 800 meters produce from 4 to 6 tons per day. The wells, 25 years old, have no hydrostatic head, make no water and, because of their depth and small size, are not being developed. It is, however, apparent that the entire fold from Sulu Tepe to Binagady is oil bearing and the wells, while small, represent some reserve.

In this area, tests being drilled are designed to reach the upper Cretaceous at depths not to exceed 2500 meters. See Fig. 16. The author visited one drilling at 1800 meters. The cellar was concrete, blow-out preventers were being used, and all equipment was heavy and of Soviet make throughout. This well was expected to reach the top of the Cretaceous at 2100 meters and was prepared to penetrate the Cretaceous 500 meters in search for deep oil. It may take many tests, however, to find the Cretaceous high, the fold being asymetrical.

The author wishes to call attention to the fact that the Subkirmaku in this area, which runs from Sulu Tepe through Binagady, has not been tested yet and may be a source of prolific production. The outcrop of the Productive section is most interesting due to its high degree of saturation. A trench dug across the outcrop filled with oil in less than a week.

[To be continued]

MEN IN THE INDUSTRY'S NEWS

A. E. WATTS, executive department, Sinclair Consolidated Oil Corporation in New York, has been appointed president of the Sinclair-Pierce Oil Company, S. A., Mexi-Co, succeeding Gayle A. Steele, who died February 27 as a result of an operation for appendicitis. Ralph Cabanas, for many years assistant to Steele, has been appointed vice president and general manager of the same company. He will continue to make his headquarters in Mexico City.

M. L. EUWER, recently resigned from Shell Petroleum Corporation, Houston, to become petroleum engineer for Union Sulphur Company at Sulphur, Louisiana. Euwer graduated from Colorado School of Mines in 1925 and has been associated with the Shell group since that time, the first two years being spent with Cia. "El Aguila" at Puerto, Mexico and the remainder of the time with Shell Petroleum Corporation in the Texas, Louisiana and Arkansas fields. For the past two years he has been the assistant chief petroleum engineer at Houston.

WALTER HELMS of Texarkana has been named a new member of the Arkansas Board of Conservation by Governor Bailey, to fill a vacancy caused by a recent resignation.

T. E. SWIGART, vice president of Shell Petroleum Corporation, St. Louis, arrived in Houston last week for a visit with his family. While in Houston, he will attend the amateur golf tournament now under way at the Houston country club.

T. J. AHERN, with Costa Oil Company, Houston, has returned from an extended trip to South America.

JOHN D. DAVIS, Illinois representative of Benedum-Trees Oil Company, maintaining headquarters in Mt. Vernon, last week while on a business visit to Flora, spiked rumors that his company was preparing to quit the basin area.

DONALD MONROE, scout of Sun Oil Company, recently presented a core taken from Tally No. 4 at 8032 feet to Governor White of Mississippi. It was the deepest core of record in that state.

M. L. McGEE, scout for Stanolind Oil & Gas Company at Holdenville, Oklahoma, has been transferred to Oklahoma City to fill the place left vacant by death of Barney Terrell.

J. M. CLARK, geologist for Gulf Oil Corporation, Tulsa, recently resigned to become connected with the geological staff of Tide Water Associated Oil Company, Tulsa.

LEO R. FORTIER, district manager of Shell Petroleum Corporation's exploration department at Wichita, Kansas, will be transferred to the Shell Oil Company at Los Angeles on March 1.

THOMAS A. MANHART, vice president of Seismograph Service Corporation, Tulsa, has recently left on an extended inspection trip to Persia.

PEYTON F. GWYNN, Wichita Falls producer, was elected president of the North Texas Oil & Gas Association at the last monthly session of the board of directors. He succeeds R. Lee Underwood.

Gwynn has been active in North Texas oil circles for nearly a score of years, and was a leader among the independent refiners when the district occupied a prominent position as a refining center.

Roy B. Jones, president of Panhandle Producing & Refining Company, oldest refining firm in the district, was elected first vice president. Homer Lee, Wichita Falls banker and operator, was chosen second vice president. J. Ed. Erwin was retained as secretary-treasurer.

OTTO OTTERSKY, with the Pure Oil Company, Michigan division, land and scouting department, from 1931-36, and for the past two years with Consumers Power Company, natural gas division, has accepted a position with the Mammoth Producing & Refining Corporation, as head of the land department, effective March 1.

KARL SCHILLING, Michigan resident geologist for Shell Petroleum Corporation for the past six years, has been transferred to St. Louis, Mo.

CHARLES W. TEATER, prominent Michigan producer, and Mrs. Teater are winter vacationing in South America.

C. I. ALEXANDER, with Magnolia Petroleum Company, Houston, was the principal speaker at the Houston Geological Society's evening meeting, which was held in the Houston Public Library, February 24. His subject was "A North and South Cross Section of the Louisiana Gulf Coast."

H. F. FORTINBERRY, production superintendent for Gulf Oil Corporation in the Wichita Falls-Ranger district, has been transferred from Breckenridge to Odessa, headquarters of the company's large scale operations in West Texas. H. D. Bell, superintendent in the Electra area, has succeeded Fortinberry at Breckenridge, and in turn relieved by William Needham, Nocona superintendent.

ANDREW W. MILLEK, chief engineer of Mexican Sinclair Petroleum Corporation at Tampico, Mexico, has returned to headquarters after a brief trip to the United States.

JAMES E. DOUGLAS, drilling superintendent of Huasteca Petroleum Company (Standard Oil Company of New Jersey) in Ebano district, San Luis Potosi, Mexico, is in the United States on business.

A. D. SANDERSON of Standard Oil Development Company, Elizabeth, New Jersey, has been appointed chairman of the Advisory Committee on A.S.A. Code for Pressure Piping of the Central Committee on Pipe Line Transportation of the American Petroleum Institute's Division of Production. C. A. Young of Dallas, Texas, secretary of the Institute's Division of Production, was named secretary of the Advisory Committee.

Membership follows: E. L. Adams, General Petroleum Corporation of California, Los Angeles, Calif.; G. M. Davidson, Natural Gas Pipe Line Company of America, Chicago, Ill.; William Groundwater, Union Oil Company of California, Los Angeles; George J. Hanks, Tide Water Associated Oil Company, New York, N. Y.; and B. E. Hull, The Texas Pipe Line Company, Houston, Texas; Stuart

L. W. Elliott, general manager of the East Dutch Indies Nederlandsche Koloniale Petroleum Maatschappij, N. V., receives data on the tenth International Petroleum Exposition from Merl Clark, assistant manager of the oil show, while J. Burr Gibbons, member of the exposition board of directors, and vice president of Roger Gano and Gibbons Inc., Tulsa, pins a Foreign Delegate badge on him. Elliott will be one of the East Dutch Indies emissaries for the oil show, which is held next May 14 to 21, at Tulsa.

Moser, Standard Oil Company of California, San Francisco, Calif.; J. H. Peper, Northern Group of Pipe Lines, New York, N. Y.; C. M. Rosebrugh, Gulf Refining Company, Houston, Texas; C. M. Scott, Stanolind Pipe Line Company, Tulsa, Okla.; H. M. Stevenson, Humble Pipe Line Company, Houston; and J. H. Wood, Jr., The Atlantic Pipe Line Company, Dallas, Texas.

P. M. FOWLIE, president, and N. Y. Knox, vice president, Shell Oil Company of Canada, addressed a meeting of the company's Canadian representatives at Toronto, Ontario, last week.

LLOYD I. YEAGER has resigned as geologist for Cities Service Oil Company to engage in consulting geological practice in Wichita, Kansas. He was formerly district geologist for the company in Kansas and recently transferred to Texas.

R. A. BROWN, JR., independent operator of Turner Valley, Alberta, discussed producing and marketing problems in western Canada before the Financinal Statisticians' Association of Toronto, Ontario, last week. He was joined by his father, R. A. Brown, Sr., president of Turner Valley Royalties, Ltd., drillers of the field's crude discovery in 1936, in answering questions following the formal discussion.

ROBERT WILKINSON, Vancouver, B. C., president of West Turner Petroleums, Ltd., with production in the Turner Valley field of Alberta, stopped in Toronto last week on his way back to Calgary from a trip to New York and Ottawa.

MAYNARD J. DAVIES, president and managing director of Davies Petroleums, Ltd., Alberta producing company, returned to Calgary last week following a visit to the United States.

W. C. FISHER, managing director of Model Oils, Ltd., Alberta producing company, has left Calgary for a trip in the United States that will include several Mid-Continent oil centers.

DALE NIX, assistant manager of California-Texas Oil Company's operations on Bahrein Island, arrived in New York last week for an indeterminate stay.

WILLIAM M. BARRETT, consulting geophysicist of Shreveport, was a Houston visitor last week.

M. J. PETERSON, with Gulf Oil Corporation, Houston, delivered a lecture in the oil and gas course of the Y.M.C.A. South Texas School of Commerce, Houston, February 24.

G. T. RHODEN, superintendent of Gulf Oil Corporation's operations in the Cleveland and Segno fields, Texas, has been transferred to Lake Charles, Louisiana.

L. F. McCOLLUM, executive vice president of Carter Oil Company, was in New York last week for conferences with officials of Standard Oil Company of New Jersey.

WARREN B. WEEKS, district geologist for Phillips Petroleum Company at El Dorado, Arkansas, addressed the Shreveport Geological Society at a dinner-meeting last Thursday, speaking on "The Stratigraphy of the Deeper Formations Found in South Arkansas."

Mike Adams, scout for Standard Oil Company of Texas, gets an opportunity to take things easy whenever he goes to the company's test out in Galveston Bay. He is shown here as he rests in an easy chair and enjoys his briar pipe while on a boat going to the well site.

BONNEAU PETERS, chief scout for Standard Oil Company of Louisiana, Shreveport, was elected president of the Shreveport Texas League baseball club, by the stockholders last week.

H. L. PHILLIPS, president, headed a group of officials of Sinclair Prairie Oil Company that visited South Texas fields several days ago. H. Smith Clark, Fort Worth, chief geologist of the southern division, also was in the party. Included were D. H. Kelsey, vice president, and Ted Hamitt, head of the legal department.

OSCAR R. CHAMPION, for several years scout then geologist for Amerada Petroleum Corporation's South Texas office in San Antonio, has been transferred to Midland office of the same concern as geologist. The move is in connection with the closing of the company's South Texas office some time during March. L. A. Wainwright, land man, will be transferred, but his destination is not decided. Boyd F. Murphy, geologist at the company's office in Pearsall, will be transferred to Tyler, where he will become geological scout. Fred Russi, of the land department, already has been transferred to Houston.

A. B. GOSS, formerly district geologist at Midland for the Mid-Continent Petroleum Corporation, has been transferred to San Antonio where he will be employed in a similar capacity by this concern. He was succeeded at Midland by District Geologist T. N. Roberts.

DIED

JAMES W. SLOAN, 68, president of Oklahoma Iron Works and International Supply Company and one of the pioneers of the oil industry, died at his home February 21. His death followed complications of a heart ailment. Sloan, a native of Allegheny City, Pennsylvania, was born in 1870. He followed the oil business from that state as far south as Mexico before coming to Oklahoma in 1904. Sloan founded the Cleveland Tool Company at that city in 1904 and moved to Tulsa in 1906.

O. R. SHAFFER, 63, scout for The Texas Company since 1918, died at a Sapulpa hospital February 21 following a short illness. Shaffer was born January 5, 1875, in Enterprise, Pa., and served for several years in Ohio and Kansas before being employed by The Texas Company.

E. F. CREMIN, Tulsa oil man and member of the "Old Timers" committee of the International Petroleum Exposition, died February 19.

W. I. SOUTHERN, 51, president of W.I. Southern, Inc., a member of Southern & Thurmond, drilling contractors, and president of Rusco Drilling Company, died at his home in Tulsa February 23, following a brief illness. Southern, active in development of Kansas oil fields, was a native of Clarksburg, West Virginia. He entered the oil business when 17 years old, and followed the industry through Kansas, Texas, Oklahoma, and opened considerable territory to drilling along the eastern slopes of the Andes mountains in Bolivia. Funeral arrangements were to be announced late last week.

NEWTON WYLIE, 45, president of Commonwealth Petroleum, Ltd., operating in the Turner Valley field of Alberta, Canada, died suddenly in New York February 15. He was also associated with Blood Indian Reserve and Treaty Petroleum Companies, which are planning exploration of Alberta wildcat acreage this year.

J. T. PERRYMAN, 82, with the land department of the old Prairie Oil & Gas Company for 14 years, died February 17 at his home in Oklahoma City. He had suffered a broken leg last July, and was believed to have been improving. Surviving are two daughters and four sons.

JOHN MONROE MUIR, 52, geologist for the Standard Vacuum Company in Far East and in recent months stationed at Papua, New Guinea, was fatally stricken January 17 with a heart attack while at Sidney, Australia. He maintained a residence at Fort Worth, Texas, although he has been on foreign assignments for a number of years. He was widely known in Mexican oil circles, having been chief geologist for the Cia. Mexicana Holandesa "La Corona" S. A., Tampico, when the latter developed production, ranging up to 90,000 barrels daily in the Tancoco and Cacalilao fields. Funeral services were held February 22 at San Francisco, Cal. Mrs. Muir and two children survive.

LOVE A. SMITH, 68, producer in Vanango district of Pennsylvania for 15 years and superintendent for the Norway-Clinton Oil Company, died February 21 at the home of his brother in Franklin, Pennsylvania, after an illness of two weeks. Surviving are his wife, one brother and one sister.

R. M. WEST, geologist for Sun Oil Company, died at Hattiesburg, Mississippi, February 21. His death followed operations for double mastoiditis.

L. N. McCORD of Phillips Petroleum Company died recently at Hattiesburg, Miss. The body was sent to Ponca City, Oklahoma, for interment.

Association Activities

Pennsylvania oil-gas conference May 27-28

Dr. Sylvain Pirson, chairman, announced last week that the seventh annual petroleum and natural gas conference, sponsored jointly by the Pennsylvania State College school of mineral industries, the Pennsylvania Grade Crude Oil Association and the Pennsylvania Natural Gas Association will be held at State College May 27 and 28.

The program and other arrangements for the conference are being completed by Dr. Pirson and the production advisory committee of the Pennsylvania Grade Crude Oil Association, headed by Robert G. Bossler, Brundred Oil Corporation.

A. P. I. Chapter at Tulsa to meet March 2

Next meeting of the Northeast Oklahoma Chapter, The American Petroleum Institute, will be held at Tulsa, March 2. George M. Vandaveer, of E. H. Moore, Inc., and program chairman for the chapter announced the program will begin at 8:00 at 202 South Denver, where a demonstration of the Ethyl Gasoline Clinic chassis dynamometer will be given. Principal speaker of the evening will be W. J. Armstrong, chief conservation officer of the Oklahoma Corporation Commission, whose subject will be "The How and Why of Proration."

Entertainment planned for Southwest A.P.I. meeting

Elaborate plans for your entertainment during the Spring Meeting of the American Petroleum Institute, Division of Production, Southwestern District, to be held in Fort Worth, Texas, March 24 and 25, 1938, have been made by the local Committee on Arrangements.

Amon G. Carter, the outstanding host of the Southwest, has invited the entire membership to his Shady Oaks Lodge on Lake Worth for a stag smoker on Thursday evening, March 24. Those who have been privileged to attend one of Mr. Carter's parties in the past will know that no one can afford to miss this fun. Many features of the Frontier Fiesta have been transplanted to Shady Oaks and you will be assured of a most unusual evening.

The ladies (wives or friends) are particularly invited to this meeting of the American Petroleum Institute. There will be an exceptionally gay dinner-dance (informal) on Friday evening, March 25, at the Fort Worth Club. Your Committee is endeavoring to make this party one which will linger long in your memory of pleasant occasions. To partially defray the expense, tickets will be sold at $3.00 each, which will include dinner, dancing, refreshments, and floor show; in fact an entire evening's entertainment. You are urged to immediately send your check to cover the number of plates you desire. Communications should be addressed to the Arrangements Committee Chairman.

As a further incentive for the ladies to be in Fort Worth during this gala occasion, arrangements have been made for a Spring Style Show, to be presented by The Fair Store at the Fort Worth Club on Thursday noon, March 24. There will be music, a splendid luncheon and an opportunity to view the latest fashions. Complimentary admission tickets to out-of-town guests will be furnished upon request and you are urged to advise us immediately.

A. A. P. G. annual meeting is March 16 to 18

The American Association of Petroleum Geologists will hold its twenty-third annual meeting at the Roosevelt Hotel, New Orleans, March 16-18, 1938. Also, the Association's Division of Paleontology, the Society of Economic Paleontologists and Mineralogists, will hold its twelfth annual meeting, March 17, and the Association's affiliate, the Society of Exploration Geophysicists, will hold its ninth annual meeting, March 14-16.

Various committee meetings are scheduled on the days immediately preceding the technical program: particularly, meetings of the executive committee on Monday and Tuesday, the 14th and 15th; the annual meeting of the general business committee on Tuesday, the 15th; and the research committee round-table discussion of "Time of Formation and Accumulation of Petroleum" on Tuesday evening, the 15th.

Five post-convention field trips are planned: (1) 2-day trip into Smith and Wayne Counties, Mississippi, to study the Oligocene-Miocene problem; (2) 1-day trip to Lake Washington sulphur mine; (3) 1-day trip to Avery Island salt mine; (4) 1-day trip to see Gulf Coast drilling operations; and (5) 1-day sight-seeing trip to Gulf Coast oil fields. Also a post-convention trip to Cuba via Tampa and Havana may be arranged for those who can make their plans in advance of the meeting. Inquiries should be directed to Roy T. Hazzard, Gulf Refining Company, Shreveport, Louisiana.

Regional stratigraphic and structural titles offered for the technical program include the following Coastal Plain papers:

Warren B. Weeks, "South Arkansas Stratigraphy with Special Emphasis on the Older Coastal Plain Beds."

M. C. Iraelsky, "Cretaceous and Late Comanche Stratigraphy of the Arkansas-Louisiana-East Texas Area."

R. T. Hazzard, A. M. Lloyd, C. I. Alexander, "North-South Cross Section, Arkansas to the Gulf of Mexico."

Urban B. Hughes, "Detailed Study of the Buccatuna-Vicksburg Contact in Smith County, Mississippi."

B. W. Blanpied, "Salt Mountain Limestone, Alabama."

B. W. Blanpied and R. T. Hazzard, "Stratigraphy of Wayne County, Mississippi."

Olive C. Postley, "Oil and Gas Possibilities of the Atlantic Coastal Plain from New Jersey to Florida."

H. B. Stenzel, "The Yegua Problem."

C. Wythe Cooke and Arthur C. Munyan, "Stratisgraphy of the Coastal Plain of Georgia."

L. W. Stephenson and W. H. Monroe, "Mappable Units in the Cretaceous of Mississippi and Alabama."

M. A. Hanna and Donald Gravell, "Tertiary Zones of Correlation through Mississippi, Alabama, and Florida."

O. R. Champion, "Subsurface Cross Section of the Cretaceous of South Texas."

Alexander Deussen and Kenneth Owen, "Schlumberger Interpretation of Gulf Coast Typical Section."

J. B. Reeside, Jr., and L. W. Stephenson, "Comparison of the Upper Cretaceous Deposits of the Interior and Gulf Regions."

Robert H. Cuyler, "The Travis Peak Formation of Central Texas."

Julia Gardner, "Notes on the Middle Eocene of the Western Gulf Province."

Arthur G. Hutchinson, "Upper Eocene Unconformity of Trinidad."

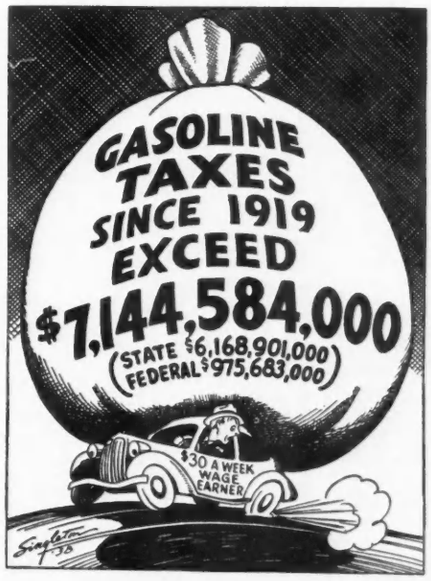
Chalmer J. Roy, "Type Locality of the Citronelle Formation, Citronelle, Alabama."

W. C. Spooner, "History of Development of Geologic Knowledge in North Louisiana and South Arkansas with Particular Reference to Well Sampling and Use of Schlumberger Logs."

B. W. Blanpied and R. T. Hazzard, "Structure and Stratigraphy of the Hatchetigbee Anticline and Jackson Fault, Alabama."

C. L. Moody, "Earlier Mesozoic History of the Northern Gulf Region."

Papers describing in detail the geology of individual oil and gas pools are being contributed largely from the Mid-Continent and Gulf Coastal Plain areas; California, the Rocky Mountain states



Nineteenth anniversary of gasoline tax, February 25, 1938, reveals motorist taxpayers, largely $30-a-week wage-earners, have paid grand total of $7,144,584,000, of which $6,168,901,000 represents state gasoline taxes and $975,683,000 is in payment of duplicating federal levy, imposed "temporarily" in 1932. First gasoline tax was levied by Oregon in 1919 at rate of 1 cent a gallon.

and the East are also represented. The following titles are in the hands of the program chairman:

J. S. Ivy, "Rodessa Oil Field."

A. M. Lloyd and R. T. Hazzard, "Resume of Louisiana Upper Cretaceous Fields."

E. B. Hutson, "Cotton Valley Field, Louisiana."

Sidney Packard, "The Sligo Field, Louisiana."

V. P. Grage and E. F. Warren, "The Sugar Creek-Lisbon Structure."

A. F. Crider, "Bellevue Dome, Louisiana."

C. C. Clark, "Sugar Creek Gas Field, Louisiana."

G. D. Thomas, "Carterville-Shongaloo-Sarepta Area, Louisiana."

H. R. Kamb, "Bear Creek, Simmsboro, and Driscoll Gas Fields, Louisiana."

Warren B. Weeks, "Schuler Field, Union County, Arkansas."

H. N. Toler and W. H. Monroe, "The Jackson Gas Field, Mississippi."

Dean Metts, "The Roanoke Field, Louisiana."

Carroll E. Cook, "Darrow Dome Ascension Parish, Louisiana."

P. H. O'Bannon and Charis R. Miller, "Anahuac, Chambers County, Texas."

Ed. J. Hamner, "Amelia Field, Jefferson County, Texas."

J. C. Poole and Kenneth D. Owen, "Placedo Field, Victoria County, Texas."

Phil Martyn, "Refugio Field, Refugio County, Texas."

J. C. Miller and W. E. Greenman, "Time of Accumulation of Oil, Manvel Field, Brazoria County, Texas."

C. E. Manion, "Bosco Oil Field, Louisiana."

G. S. Buchanan, "Cheneyville Oil Field, Rapides Parish, Louisiana, and Its Relation to the Areas of Mother Salt Deposition."

Boyd Best, "The Lopez Field of Webb and Duval Counties, Texas."

Harvey Whitaker, "The Hoffman Field of Duval County, Texas."

W. D. Anderson and U. R. Day, "Monument Oil Field, New Mexico."

R. L. Denham, "Means Pool, Andrews County, Texas."

Allen W. Tillotson, "The Olympic Pool, Hughes and Okfuskee Counties, Oklahoma."

Frederic A. Bush, "Geology of the Moore Field, Cleveland County, Oklahoma."

Addison Young and Max David, "Geology of the Goldsmith Pool, Texas."

Wayne Jones, "Cayuga Oil Field, Texas."

J. E. Hupp, "The Cut Bank Oil Field, Montana."

W. T. Nightingale, "Petroleum and Natural Gas in Non-Marine Sediments of the Powder Wash Field in Northwest Colorado."

Frank W. DeWolf, "Paleozoic Beds in the Baker-Glendive Well in Southeastern Montana."

R. G. Reese, "The El Segundo Oil Field, Los Angeles Basin, California."

E. J. Bartosh, "The Wilmington Oil Field, Los Angeles Basin, California."

Regional Papers

In the Mid-Continent and Rocky Mountain provinces noteworthy contributions to regional stratigraphy and structure are the following:

Philip B. King, "Paleogeography and Correlation of West Texas Permian."

C. C. Albritton, "Geology of Malone Mountain, Hudspeth County, Texas."

C. E. Dobbin, "Geologic Structure of Part of Petroleum Reserve No. 7, Washington County, Utah."

Samuel G. Lasky, "A Newly Discovered Section of Trinity Age in Southwestern New Mexico."

F. B. Plummer and R. C. Moore, "Stratigraphy and Structure of the Older Carboniferous Rocks on the Llano Uplift in Central Texas."

Clark Millison, "Subsurface Study of the North Flank of the Wichita Mountains, Oklahoma."

George Norton, "The Permian Red Beds of Kansas."

Roy Hall, "History of the Central Kansas Uplift."

Marvin Taylor, John Garlough, "Geology of the Southwest Kansas Gas Area."

Robert Roth, "The Triassic Period in the United States."

From the eastern states come the following contributions:

J. R. Lockett, "Structural Significance of the Cincinnati Arch."

Kendall E. Born, "A Lower Ordovician Sand Horizon in Middle Tennessee."

Current Developments

In a brief symposium on current developments in various districts the following authors and titles will be presented:

A. H. Bell, "Illinois Developments During 1937."

Arthur C. Munyan, "Recent Petroleum Activities in the Coastal Plain of Georgia."

H. P. Bybee, "Recent Development in West Texas and New Mexico."

Rycroft G. Moss, "Recent Kansas Developments."

Edwin H. Hunt, "New Developments in the Rocky Mountain Area."

R. B. Grigsby, "South Louisiana Current Developments."

H. K. Shearer, "Recent Developments in North Louisiana and South Arkansas."

Stuart Mossom, "South Texas Developments in 1937."

Basil B. Zavoico, "Developments in Russia During 1937."

Papers of General Scope

Contributions of general scope are as follows:

F. H. Lahee, "Wildcat Drilling in 1937."

R. J. Schilthuis, "Behavior of Fluids in Oil Reservoirs."

R. J. Schilthuis, "Connate Water."

J. M. Frost, III, "The Geologic Aspect of Heaving Shales on the Gulf Coast."

Stanley C. Herold, "Criteria for Determining the Time of Accumulation Under Special Circumstances."

George A. Wilson, "The Role of the Petroleum Geologist in the Development of the Law of Oil and Gas."

F. B. Plummer, "Oil Reservoirs."

John L. Rich, "Graben Faulting and Associated Phenomena."

Frank G. Miller and H. C. Miller, "Resume of Problems Relating to Edgewater Encroachment in Oil Sands."

R. T. Hazzard, "Resume of Geophysical Activities in North Louisiana and South Arkansas."

T. C. Hiestand, "Studies of Insoluble Residues from the 'Mississippi Lime' of Central Kansas."

R. Dana Russell, "A Test of Petrographic Correlation of Oil Sands in the Gulf Coast."

William L. Horner, "Sand Evaluation by Core Analysis."

J. Brian Eby, "Relation of Petroleum Exploration and Discovery to the Petroleum Industry."

Michel T. Halbouty, "Effects of Tides, Winds, and Barometic Pressures on Gulf Coast Production."

Ralph E. Taylor, "A Contribution to Salt-Dome Terminology."

Fuqua talks on K-M-A at Wichita geologists' meet

Geology and development activity in the K-M-A field, North Texas, were discussed by H. B. Fuqua, chief geologist in the Fort Worth division for Gulf Oil Corporation and president of the American Association of Petroleum Geologists, before members of the Kansas Geological Society in Wichita February 23. Ira H. Cram, Pure Oil Company, Tulsa, secretary-treasurer of the association, and Walter A. Ver Wiebe, editor of publications, were also guests of the Wichita chapter.

The new Texas boom area will be prorated in proportion to other fields of the state, according to Fuqua, and is not likely to become a disturbing market factor. He predicted that the top allowable per well would eventually be forced to the 30-barrel level, due to the projected large scale drilling program. Production will embrace an area in excess of 20,000 acres, but the average crude yield per acre will be comparatively low considering lease bonuses and development costs, he added.

Texas land sale

Bids on two tracts of Texas State land will be received in Austin on March 4 by the Board for Lease of Eleemosynary and State Memorial Park Lands of the State of Texas. Approximately 1100 acres are included in the tracts offered, and no bid will be acceptable for less than one dollar an acre and ⅛ royalty. The tracts are described below:

(1) East ½ of Section 62, and part of South ½ of Section 51, Blind Asylum lands, excluding the area immediately surrounding State Hospital buildings, Taylor County, Texas, leaving acreage of approximately 542.0 acres. No well shall be drilled within 1000 feet of any building occupied by patients of said hospital.

(2) Approximately 530 acres belonging to Wichita Falls State Hospital, being part of John Scott Survey Abstract 295, and part of Cherokee County School Land Survey, as indicated on sketch attached hereto, Wichita County, Texas. No well shall be drilled within 1000 feet of any building occupied by patients of said hospital.

R. C. FIELDS, tool pusher for Bert Fields Drilling Company, Dallas, has resigned to become vice president of the Ray Drilling Company, Midland, Texas. W. C. (Bill) Ray, Fort Worth, is president, and Paul D. Beaird, Dallas, is secretary-treasurer.

Improvement Continues

Stronger gasoline market results from fewer offerings as plants close and runs are reduced, and despite further gains in stocks

THE markets of the oil industry have continued generally firm from well to service station; and there has been some additional improvement of the gasoline market, which began to move upward about two weeks ago, following four months of steady decline.

The recent improvement of the gasoline market has occurred in consequence of fewer offerings in the open market, attending recent shutdowns of refineries and reduced refinery runs.

While the gasoline market has been tending to improve, the markets for fuel oil and kerosene have reacted less favorably.

The demand for lighter fuel oils for heating has been somewhat lower lately, and prices in some instances have declined ⅛ cent a gallon. The heavier fuels for industrial use also have been in comparatively light demand lately.

Crude Market Firm

The markets for crude oil have continued generally firm, although there has been further evidence that purchasers desire to hold down their takings as much as possible.

In Kansas, for instance, there has occurred an extension of pipe line proration. The Stanolind Crude Oil Purchasing Company, effective February 19, extended pipe line proration to all the prorated fields in Kansas where it is a purchaser. For some time the company has been buying only 85 percent of the allowable production of wells to which it is connected in Ellis County, Kansas. The company will apply that same percentage in all other fields where it buys, except in areas which are not prorated. This action will result in a reduction of about 2500 barrels daily in Stanolind's purchases in Kansas.

The company took the action after the Kansas Corporation Commission had decided not to issue any emergency order reducing allowables in the state during the remainder of February.

The Kansas Corporation Commission had scheduled a monthly proration meeting on February 24 for considering allowables in March.

As a whole, the national picture in crude oil production is satisfactory. Most of the leading oil producing states contemplate for March a continuation of comparatively strict allowables. Oklahoma again plans to hold production below the indicated market demand, as forecast by the Bureau of Mines, and Texas will continue the Sunday shutdowns that have been employed in recent weeks.

Demand Relatively Low

Much of the difficulty experienced in the oil industry's markets lately has been due to relatively light demand, attending the current business recession. And no relief in this connection is in immediate prospect.

The Bureau of Mines, in making its estimate of demand for crude oil and petroleum products in March, has anticipated a continuation of only moderately larger consumption this year than in the early part of last year.

In fact, March is expected to show a somewhat smaller improvement over a year ago than did February and January. The bureau has estimated that the total demand for domestic crude oil in March will be 5.4 percent larger than in March last year. And an even smaller increase in gasoline demand is anticipated. The bureau has forecast that domestic demand for motor fuel in March will be ¼ of 1 percent higher than the apparent demand in March last year, although about 5 percent more than the estimated normal demand for March, 1936. Foreign requirements of United States motor fuel are expected, however, to be 48.3 percent larger in March this year than in March last year. The total demand for motor fuel in March, domestic and foreign, has been estimated 3 percent larger than in March last year.

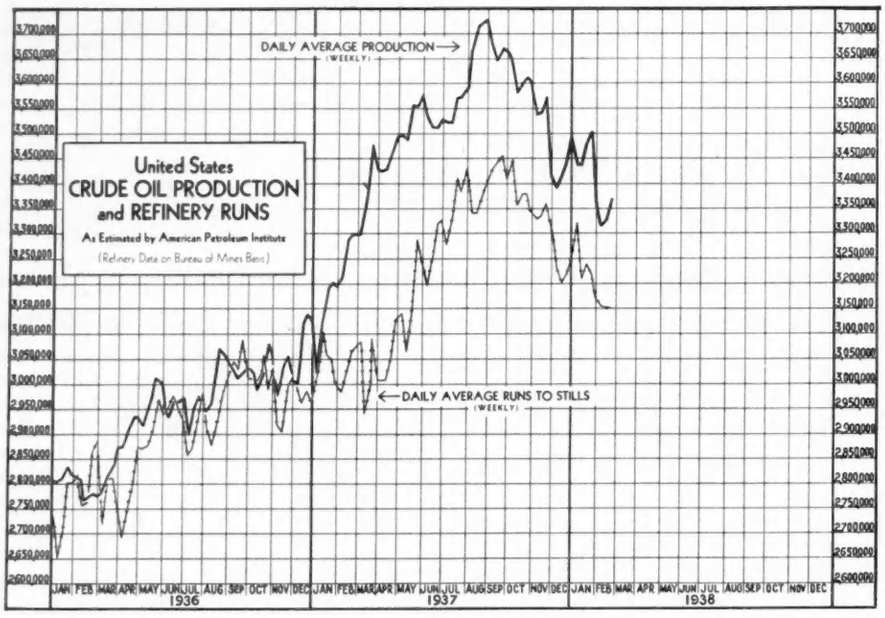
These figures on indicated market demand for both crude oil and motor fuel indicate a further tapering off of the previously rising trend of consumption. In January, the Bureau of Mines had estimated that crude oil requirements would be 6.2 percent larger than in January of 1936 and that gasoline demand would total approximately 10 percent more. For February, the bureau predicted that crude oil requirements would be 7.2 percent larger than in the

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
January 2, 1937	3,121,400	3,030,000	287,659,000	62,661,000	106,330,000
January 30	3,194,050	2,995,000	285,384,000	69,540,000	102,078,000
February 27	3,296,100	3,085,000	288,121,000	78,786,000	99,534,000
March 27	3,431,300	3,060,000	293,587,000	83,538,000	96,591,000
April 24	3,496,400	3,125,000	300,737,000	82,303,000	94,100,000
May 29	3,573,000	3,245,000	306,445,000	78,758,000	96,139,000
June 26	3,529,600	3,235,000	307,679,000	75,427,000	100,395,000
July 31	3,591,900	3,425,000	308,250,000	70,872,000	108,209,000
August 29	*3,731,450	3,425,000	309,506,000	66,997,000	112,111,000
September 25	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
October 2	3,647,450	3,400,000	309,036,000	65,266,000	117,076,000
October 30	3,602,950	3,345,000	307,140,000	66,836,000	121,070,000
November 27	3,425,800	3,325,000	304,156,000	68,544,000	121,616,000
December 25	3,492,600	3,245,000	303,294,000	74,437,000	118,659,000
January 1, 1938	3,436,600	3,320,000	303,468,000	77,291,000	118,660,000
January 29	3,357,650	3,170,000	304,286,000	84,844,000	118,793,000
February 5	3,316,450	3,155,000	304,494,000	86,484,000	118,619,000
February 12	3,324,500	3,150,000	304,915,000	87,813,000	119,293,000
February 19	3,369,250	3,150,000	.....	*89,774,000	119,948,000
February 20, 1937	3,295,950	3,065,000	†286,116,000	74,798,000	99,391,000
Change in past year	+2.2%	+2.8%	+6.6%	+20.2%	+20.7%

* All time peak. † Stocks February 6, 1937.



corresponding month a year previously and that total demand for gasoline would be up 3.2 percent.

Statistical Situation

As in earlier weeks, the statistics of the petroleum industry during the past week were partially favorable but less satisfactory in other phases.

Despite an increase of about 45,000 barrels, crude oil production in the United States in the week ended February 19 was moderate, averaging 3,369,250 barrels daily. That was 2.2 percent larger than in the corresponding week of last year. This increase over a year ago was, however, smaller than the gain that has occurred meanwhile in petroleum consumption.

Refinery operations also have been moderate in recent weeks because of curtailed activity in many plants and the closing down of some refineries. Crude oil runs to stills in the week ended February 19 averaged 3,150,000 barrels daily, or the same as in the previous week. At this level, the refinery operations were only 2.8 percent above the level of a year ago.

Gasoline Stocks High

Gasoline stocks in the United States continued to increase in the week ended February 19, rising to another all-time peak of 89,774,000 barrels. At that level, the gasoline inventories were 20.7 percent greater than on the corresponding date a year ago. The gasoline stocks are far out of line with the current market requirement. In contrast with this 20.7 percent increase in stocks over a year ago, the consumption of gasoline, as pointed out above, has been running lately only a little higher than at this time last year.

Summary of Wells Completed in the United States Week Ending February 26, 1938

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total, 1938	Total this Date, 1937
Alabama	....	....	....	....	.....	....	1
Arkansas	2	1	....	1	157	36	9
California	14	10	1	3	19,050	190	209
Colorado	....	....	....	....	.....	2	2
Florida	....	....	....	....	.....	....	.....
Illinois	27	19	....	8	6,097	124	5
Indiana	....	....	....	....	.....	13	26
Kansas	34	26	1	7	37,855	340	331
Kentucky	16	6	8	2	144	117	40
Louisiana	16	13	....	3	5,725	193	95
Michigan	17	10	1	6	2,167	137	131
Mississippi	....	....	....	....	.....	5	5
Montana	1	1	....	....	50	7	16
Nebraska	....	....	....	....	.....	....	.....
New Mexico	4	3	....	1	2,577	81	103
New York	....	....	....	....	.....	13	.....
Ohio	15	2	11	2	63	166	254
Oklahoma	47	28	2	17	1,897	372	459
Pennsylvania	3	1	2	....	2	39	7
Texas	257	203	7	47	332,795	2,105	2,136
Utah	....	....	....	....	.....	....	.....
West Virginia	12	1	9	2	5	158	134
Wyoming	2	2	....	....	269	13	16
Total this week	467	326	42	99	408,903	4,111	3,979
Total last week	431	296	37	98	370,181	....	.....
Total this year	4,111	2,771	398	942	3,378,182	....	.....

CRUDE OIL PRICES

Complete tables of prices paid for crude oil at the well in principal fields is shown on page 58 of the issue of February 7. This schedule will appear only in the first issue of each month.

Fuel oil stocks also have increased until they are now somewhat out of line with market requirements. In the week ended February 19, the fuel oil stocks increased further 655,000 barrels, or to 119,948,000 barrels, and at that level, they were 20.7 percent larger than one year previously.

Refinery Prices

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below 4 to 4¼ cents a gallon; 63 to 66 octane, 4⅜ to 4½ cents; 67 to 69 octane, 4⅝ to 4⅞ cents; and 70 to 72 octane, 4⅞ to 5¼ cents.

Corresponding prices in the Chicago market were as follows: 4 to 4⅛ cents, 4¼ to 4⅝ cents, 4⅝ to 4¾ cents, and 4⅝ to 5 cents.

In East Texas the most common gasoline, 60-62 400 end-point, was priced generally around 4¼ cents a gallon.

Kerosene prices f.o.b. Oklahoma refineries ranged from 4⅛ to 4⅜ cents a gallon for the 41-43 water white grade, and from 4¼ to 4½ cents for the 43-44 water white grade. Corresponding prices in the Chicago market were 4⅛ to 4¼ cents and 4¼ to 4½ cents.

Fuel oil prices were mostly unchanged, although some grades were down ⅛ cent a gallon. In the Chicago market range oil was priced from 4 to 4¼ cents a gallon. The No. 1 white oil was priced from 4 to 4¼ cents, and the No. 1 straw from 3⅞ to 4 cents. No. 2 straw was 3¾ to 3⅞ cents and No. 2 dark from 3½ to 3¾ cents. No. 3 oil was 3½ to 3¾ cents. No. 4 was $1.05 to $1.10 a barrel to domestic consumers and 95 cents to $1.10 to industrial buyers. No. 5 oils were 80 to 85 cents for domestic and 75 to 85 cents for industrial sales. The No. 6 oil was quoted to the usual industrial customers at 52½ to 60 cents a barrel.

S. M. YOSS, plant engineer with Wadhams Oil Company at Milwaukee who was with the company for the past 37 years, retired last week under the company's annuity plan.

Comparison of Permits Granted for New Wells

STATE	Week Ending Feb. 26	Total this Mo.	Total this Year	Total this Date Last Year	1937 Year Total
Arkansas	1	19	40	12	240
California	19	76	201	202	1,584
Louisiana	41	145	232	140	1,227
Kansas	30	133	296	342	2,663
Michigan	10	35	90	137	958
Oklahoma	44	177	352	405	2,711
Texas	197	1,130	2,208	2,389	17,238
Total	342	1,715	3,419	3,627	26,621

Production Drops

Decline of 23,832 barrels daily brings total 115,982 barrels below bureau recommendation; Kansas, Oklahoma and Texas in line.

AS A result of a big slash in two of the leading producing states during the past week, United States crude oil production dropped again, averaging 3,322,818 barrels a day, which was 23,832 barrels a day less than in the previous week and 115,982 barrels less than the Bureau of Mines recommendation for February.

For the first time within a long period, Oklahoma and Kansas produced less than the allowable prescribed by these states.

Texas output was 9800 barrels a day higher than in the previous week, averaging 1,249,500 barrels daily, which was 116,200 barrels less than the Bureau of Mines recommendation and 155,740 barrels less than the state allowable.

California last week averaged 745,443 barrels a day, 9943 more than in the previous week, and 51,743 barrels more than the Bureau of Mines estimate as well as the recommendation of the Central Committee of California Oil Producers.

Louisiana showed a gain of 3075 barrels a day, the daily production having been 256,250 barrels. That was 16,850 barrels more than the federal allocation and 11,550 barrels more than the allowable prescribed by the state.

Oklahoma output decreased 40,725 to 491,575 barrels a day, which was 78,125 barrels less than the Bureau of Mines estimate and 8425 barrels less than the state allowable.

Kansas last week averaged 171,150 barrels a day, 7650 less than in the previous week and 5250 barrels less than the indicated demand and the state allowable.

East Texas crude posting in danger

Reduction of the crude price posting in the East Texas field is not a remote possibility. Normal markets available to the field have been greatly curtailed, and the crude output has expanded since the price was advanced from $1.27 to $1.35 a barrel on May 22, 1937. Competition in the form of premiums ranging up to 10 cents a barrel paved the way for the higher posting, which was not granted other producing areas.

Payment of bonuses for East Texas crude, in the form of excessive field gathering charges and also direct to producers, continued after the price hike, but on a reduced basis. Substantial shrinkage in the size of the bonus, except where contracts were binding, began occurring with the passing of the summer motoring season. Toward the close of 1937, numerous independent systems were forced to sell out, or to merge, due to lessened demand for spot quantities of oil. The situation has become more serious for the small units without contracted outlets since the turn of the year. Their position was

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Feb.)	State Allowable in February	BARRELS DAILY FOR WEEK ENDING	
			February 26	February 19
TEXAS—				
Texas Panhandle	.....	.....	68,800	64,100
North Texas	.....	.....	64,100	63,500
West Central Texas	.....	.....	27,100	26,700
West Texas	.....	.....	177,900	178,500
East Central Texas	.....	.....	89,800	91,100
East Texas Field	.....	.....	425,500	425,200
South Texas	.....	.....	212,700	206,700
Texas Gulf Coast	.....	.....	183,600	183,900
Total Texas	1,365,700	1,405,240	1,249,500	1,239,700
CALIFORNIA—				
Long Beach	.....	.....	56,756	58,000
Santa Fe Springs	.....	.....	40,325	40,000
Huntington Beach	.....	.....	35,399	35,500
Dominguez	.....	.....	30,183	29,000
Inglewood	.....	.....	16,264	16,000
Ventura Avenue	.....	.....	37,787	37,000
Seal Beach	.....	.....	9,915	9,500
Midway-Sunset	.....	.....	73,390	77,000
Elwood	.....	.....	7,651	7,500
Kettleman Hills	.....	.....	83,183	78,000
Mountain View	.....	.....	13,112	14,000
Playa del Rey	.....	.....	7,551	7,000
Wilmington	.....	.....	116,230	93,000
Others	.....	.....	217,697	234,000
Total California	693,700	*693,700	745,443	735,500
OKLAHOMA—				
Oklahoma City	.....	.....	101,975	117,200
Seminole Area	.....	.....	98,150	103,050
Crescent	.....	.....	7,700	8,175
Lucien	.....	.....	12,200	11,700
Fitts	.....	.....	58,275	65,025
Edmond	.....	.....	7,800	10,400
Moore	.....	.....	7,475	8,350
Others	.....	.....	198,000	208,400
Total Oklahoma	569,700	†500,000	491,575	532,300
LOUISIANA—				
North Louisiana	.....	.....	79,550	77,075
South Louisiana	.....	.....	176,700	176,100
Total Louisiana	239,400	244,700	256,250	253,175
KANSAS—				
Ritz-Canton	.....	.....	6,175	6,575
Chase	.....	.....	5,725	5,675
Hollow-Nikkel	.....	.....	3,000	3,400
Sedgwick	.....	.....	3,800	4,050
Burrton-Haven	.....	.....	11,125	11,075
Lorraine	.....	.....	2,350	2,900
Russell County	.....	.....	28,700	28,300
Silica—West	.....	.....	15,200	16,100
Silica—South	.....	.....	2,850	2,950
Others	.....	.....	92,225	97,775
Total Kansas	176,400	176,400	171,150	178,800
NEW MEXICO	105,100	105,100	105,400	105,900
MICHIGAN	52,800	.....	50,800	50,200
ARKANSAS	36,800	.....	46,800	48,075
MOUNTAIN STATES—				
Wyoming	51,800	.....	47,100	46,500
Montana	12,400	.....	14,100	13,900
Colorado	4,400	.....	4,400	4,300
Total Rocky Mountain States	68,800	.....	65,600	64,700
EASTERN STATES—				
Pennsylvania Grade	.....	.....	80,100	79,700
Southern Illinois (New Pools)	.....	.....	27,800	27,200
Illinois-Indiana (Old Pools)	.....	.....	11,050	10,500
Others, Eastern	.....	.....	21,350	20,900
Tatal Eastern States	130,000	.....	140,300	138,300
Total United States	3,438,800	.....	3,322,818	3,346,650

* Recommendation of Central Committee of California Oil Producers.
† Temporary emergency order issued by State Corporation Commission, February 9.

further weakened by the curtailment of crude runs by local refineries.

Gathering Lines Sold

Gathering systems that formerly afforded a prolific source of revenue for the "middleman" have been thrown on the block lately for their inventory value, with no compensation asked for crude purchase contracts and the well connections. One year previously, well connections commanded cash, due to competition.

Allowable production of the field was 461,587 barrels daily from 22,716 producing wells when the price was advanced to $1.35. Currently the allowable is 496,879 barrels daily from 24,576 wells, with the field temporarily on a 6-day week basis.

In addition to the higher allowable, a substantial volume of crude heretofore absorbed by local refineries has been forced upon distant markets. Eleven active plants shipped 306 cars of gasoline, aggregating 2,480,677 gallons, during the week ending February 20. The same number of plants were in operation during the same week in 1937 when a total of 3,741,515 gallons of gasoline in 462 cars were dispatched to interstate and intrastate points. Gasoline recovery has been improved by these plants in the meantime.

Trial Ends Purchases

Slump in the refinery throughput has been more pronounced since the Madison trial caused all majors to discontinue purchase of refined products from East Texas plants. Market support given by the majors over a period of years enabled the district to emerge from a fly by night skimming plant setup to a substantial and efficient refining center. Freight rate barriers circumscribe the gasoline markets available to these plants. Now that the majors have been forced out of the picture, the East Texas refiners find it necessary to cut runs to their trade territory demand.

Market competition from other high gravity oil areas that have lower transportation costs in reaching coastal refineries and tanker loading facilities has been more effective in softening the East Texas crude market than the local refining situation. East Texas crude, testing 38-39 degrees gravity, involves a minimum transportation cost of 20 cents a barrel loaded aboard ship, or a total of $1.55 a barrel.

Texas-Louisiana Gulf Coast and Southwest Texas crudes of equal refining value have lower transportation costs that offset their slightly higher price posting. Those areas have cut in on the normal East Texas domestic and export spot and contracted sales, and have asked for and received higher proration allowables at the expense of the latter.

Prices Investigated

Federal investigation of the crude price situation in the East Texas field now under way has caused more consideration to be given rumors that an adjustment of the price schedule can be expected shortly. Predictions are that the price will be restored to the May 22 level, and that the reduction will not be extended beyond the one field.

A lower price posting would have a tendency to check the fresh outbreak of drilling of inside locations. Field activity is virtually unrestrained in regard to close spacing, and currently 80 rigs are in service, making a total of 155 operations. The field added 49 producers and a failure the past week, and within a month, the daily allowable will be approximately 500,000 barrels, as each new well adds 20.3 barrels daily to the field's quota.

Business slump

[*Continued from page 17*]

for asphalt was 11.4 percent larger in 1937 than in 1936; but it was 24.4 percent smaller in December, 1937, than in December, 1936. Road oil's domestic demand showed a 10.2 percent increase for all 1937, but a 16.1 percent decline for the final month.

Export Business Good

As indicated previously, the declines in domestic consumption of oils have been to some extent cushioned by exceptionally good export business.

Exports of crude oil in all of 1937 were 34.5 percent larger than in 1936. And those in December, 1937, exceeded the shipments of December, 1936, by 50.5 percent, indicating an acceleration of out-going traffic in crude.

The trend was not so favorable, however, in exports of refined products. Those shipments were 28.7 percent larger in 1937 than in 1936, but only 8.1 percent larger in December, 1937, than in December, 1936.

Labor situation

[*Continued from page 14*]

labor in the industry; establish the rates of wages, period for and conditions governing overtime; classify employees and employers and separately provide for each classification with respect to any matters dealt with in a scheme; prohibit overtime without a permit; fix minimum charges for services; authorize the fixing by the advisory committee of a minimum rate of wages lower than the rate fixed by the schedule for certain classifications, and assess employers and employees in any industry to provide revenue for the enforcement of the schedule.

New sections of the act would provide that where an agreement is made between an employer and employe whereby the amount of wages payable is less than the minimum, both the employer and the employee shall be liable to a fine of not more than $100, and would make it an offense for an employer to discharge an employee or discriminate against him because of a complaint under the act.

Fremming speaks at Odessa

On his current promotional tour, H. C. Fremming, president of the International Oil Field Workers' Union, stopped over at Odessa, Texas, February 18, and addressed a group of oil field workers from Hobbs, Wink, Monahans, Big Lake and other oil field towns. In his address he explained that the last resort for higher wages is a strike, and that the purpose of labor organization is to keep a high purchasing power so that merchants could sell their goods.

Concern felt by oil producers operating in the Permian field and in New Mexico had arisen when it was believed the meeting was for calling a strike. Inquiries as to the possibilities of a strike had come from the eastern offices when the rumor of a strike spread.

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Edited by
WM. V. GROSS, Associate Editor

Cold Slows Work

Sub-zero weather holds Turner Valley completions to two; wildacts active

TWO tests were completed in the Turner Valley field of Alberta, Canada, last week, but their importance could not be immediately determined pending clearance of drilling fluid and five-day potential tests. Cold weather, which made it difficult to carry on routine operations and construction of derricks for new tests impractical, continued to slow down field activity. Drilling crews were forced to watch water lines rather than drilling lines as the sub-zero weather persisted.

Watching Outpost

C. & E. Corporation, Limited's No. 29 (Turner-Basin) temporarily stopped drilling at 349 feet in the Madison, or a total depth of 6624 feet, where a core was to be taken. Located on Legal Subdivision 7, Section 27, Township 20, 3-w5, it is almost a mile west and two miles north of large producers on the west flank of Southern Turner Valley and being closely watched.

Richland Oils, Limited's No. 2, Legal Subdivision 5, Section 28, Township 18, 2-w5, failed to complete last week because of severe weather. The well is located in the midst of several large crude producers and crude oil sprayed equipment every time the tools were lifted from the hole. Frequent use of steam to clean off the oil coating resulted in ice that interfered with work. Drillers were busy cleaning the derrick and equipment of ice, a job that was expected to take two days, but the well is not to be drilled in until the weather moderates.

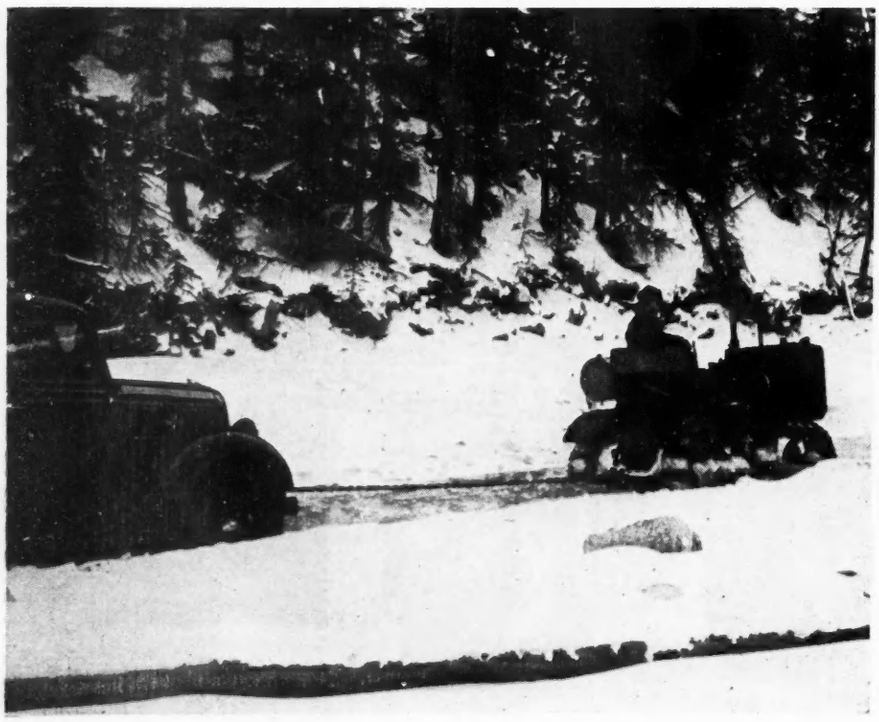
Arrangements were being completed last week between Phillips Royalties, Limited, and Home Oil Company for drilling to completion Phillips Petroleums, Limited's well on Legal Subdivision 16, Section 16, Township 20, 3-w5, about 1½ miles southwest of Royalite Oil Company's No. 29 in the northern part of the field. The Home company is taking over 1600 acres in the vicinity of the well from Phillips Royalties, parent company of Phillips Petroleums, and the money will be used to complete the test, which has been standing cemented at 4200 feet for some time.

Encounters Marker

Of Alberta wildcat tests, Green Valley Petroleums, Limited's Banner 1, Legal Subdivision 6, Section 34, Township 17, 3-w5, on the Highwood-Sinclair structure, encountered the crystalline marker in the Madison limestone at 365 feet and is expected to reach the first porous horizon shortly. Located southwest of Southern Turner Valley, the wildcat's log has shown samples similar to typical wells of the major field since entering the Fernie shale, but formations were always about one-third thicker. This characteristic has continued into the limestone.

On Birch Ridge structure, 20 miles west of Calgary and near Bragg Creek, Elbow Oil Company, Limited's wildcat was drilling in the Brown sands at a total depth of 5420 feet. Crude oil showings and some gas have been encountered, lending strength to belief that production may be obtained in this formation. Location is Legal Subdivision 11, Section 35, Township 22, 5-w5.

Pacalta Oils, Limited's test on Battleview structure, east of Wainwright, is due for a delay of three or four weeks caused by crumbling of the cement plug drilled out late last week. Efforts will be made to re-cement, and if that fails string of 6⅝-inch casing will be run within the 8⅝-inch to shut off the salt water let in around the present casing. Showings of oil and gas were coming through the drilling fluid, which had been baled to within 300 to 400 feet of bottom, at 2056 feet. The test is 2400 feet east of Battleview Oils, Limited's 1, discovery test, which had a flow of wet gas estimated at 50 million cubic



Model Oils was glad when the creek froze over as it permitted them to get equipment to the wildcat in the Province of Alberta, Canada. C. Spencer Clark sent in the picture.

BLAMES COMPANIES

MEXICO CITY, Feb. 24.—The oil companies have resorted to action," President Cardenas accused in addressing the convention here of the Confederation of Mexican Workers and Farmers, Mexico's most powerful labor organization.

"This action," the president declared, "will be answered by the government with enforcement of Mexico's laws."

feet a day when completed last year. The discovery has since been shut in, and the Pacalta test was made on a location believed to be lower on structure and one which was expected to result in a crude producer. It is, however, 18 feet higher on structure, and was drilled through 13 feet of sand in which the Battleview Oils well was stopped. A deeper sand was picked up at 2037 feet.

Wildcat to Test

In British Columbia, in the Sage Creek area, Columbia Oils, Limited's wildcat stopped drilling at 7570 feet where a production test is planned. The well is in the southeastern part of the province, 6 miles west of the Alberta boundary and 180 miles southwest of Calgary. Modern methods of travel and communication have played an important part in bringing this test toward completion. The well was started several years ago when it took four days to get from the well site to Calgary. It was a journey of 850 miles that had to be made through Kalispel, Montana. During the past few months a landing field was cleared near the well and short wave radio communication established. Their practicability was proven during the past week when a motor burned out. It occurred at 8:30 in the evening, and by 9 o'clock contact had been established by radio. An order was given a Calgary company by Robert Wilkinson, managing director, with instructions to have the needed parts at the airport for shipment the following morning. A special plane took off early in the morning, the parts were delivered and repairs completed by noon. Loss of time was less than a day.

CANADA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
TURNER VALLEY—		
West Flank Oil Co., Ltd.'s 2	666	6827
Brown Oil Corporation, Ltd.'s 3	*	6760

*Failures; †Junked; ¶Million cu. ft. gas.

MEXICO
Completions
(JANUARY)

Company, Well and Location	Init. Prod. Bbls.	Depth
Gen. Administration of Nat. Petroleum, Petromex 20, Sn. Miguel Tres. Aguas, Tantima, Vera Cruz	70	2640
Rancherias 6, Camargo, Tamaulipas	¶2.5	1535
Francisco and Luz Etienne Maza, Exp. 4, Camalote, Panuco, Vera Cruz	189	1985
American Int. Fuel & Petr. Co., Altamira 110, Altamira Tamaulipas	*	2440
Altamira 107-a	*	2835
Metlac Pet. Co., Vila 1, Puerto Mexico, Ver.	*	2410

*Failures; †Junked; ¶Million cu. ft. gas.

Oil indications reported on Chile's Easter Island

Naval radio reports received recently at Valparaiso, Chile, stated oil indications were observed in February on Easter Island, a territory of Chile located 2300 miles west of the coast at the eastern tip of the Polynesian Islands in the southern part of the Pacific ocean. Area of Easter Island is about 32,000 acres, or about two-thirds of that confined within the city limits of Houston. One peak on Easter Island is 1970 feet high. Current population of the island is placed at 250.

Summer to witness drilling at Cold Bay and Chinitna

A wildcat test not far from two holes put down by Standard Oil Company of California in 1924 at Cold Bay, near Kanatak, Alaska, will be drilled this summer by that company in conjunction with Union Oil Company of California and Tide Water Associated Oil Company. The early tests were drilled to depths of 3500 and 5500 feet.

Work that has been carried on at Chinita Bay for the past two years by Iniskin Drilling Company is to be continued this summer. The past season's developments, which brought gas and oil showings, warrant the expenditure of as much as $300,000 more to carry the well to 10,000 feet if necessary, according to Russell Havenstrite, president of the Iniskin company.

Legislation trends

[*Continued from page 12*]

partment of justice may institute proceedings as a result of which a final decision as to ownership may be rendered by the Supreme Court which, he told the committee, has never acted upon that question.

Similar views were expressed by Harry Edelstein, assistant solicitor of the interior department. Edelstein revealed that the department, after refusing to issue permits under the leasing act to lands below low-water mark, has been reconsidering the question during the past year, but has been unable to solve the problem satisfactorily and is anxious for a Supreme Court decision.

The legislation, he said, would not impose upon any existing titles to such lands any cloud which does not now exist by reason of the uncertainty as to ownership.

Opening the case for the opposition, Governor James V. Allred of Texas declared that his state has always asserted and now asserts title to the submerged lands off its coasts.

Texas Already Collecting

"The government does not own the submerged lands," he declared. "According to an unbroken line of decisions of the Supreme Court of the United States, title in not only tidewater lands but in submerged lands as well has been recognized in the several states.

"I take the position that, according to those decisions, each state succeeds to the same rights as the thirteen original states. Texas, by virtue of the revolution it won, stands in a peculiar position, but in any event we take the position that this resolution constitutes a serious cloud, if passed, upon the title of not only California but of all the states."

The Texas executive cited a number of Supreme Court decisions in support of his contention, and finally wrung from Representative Hobbs an admission that Texas was probably situated differently than other states with respect to title to submerged lands because of provisions of the annexation treaty by which the state joined the union, holding that its jurisdiction extended seaward for three leagues.

Enactment of the legislation, Governor Allred contended, would lead to endless litigation and the states at interest—California, Texas, Louisiana and Mississippi—would lose millions of dollars.

The Texas school fund has a tremendous sum at stake, the Texas offshore oil fields being estimated at 1,000,000 acres. Five million dollars already has been collected by the state in bonuses and royalties, $18,000,000 is covered in oustanding contracts, and the estimated proven reserve is estimated at $100,000,000.

California Scandal Hinted

Political considerations control the California situation, where oil interests, seacoast cities, counties and the state are fighting for title to the submerged lands, it was charged by Representative Byron N. Scott of Long Beach, who at the opening of the second day's hearings urged enactment of the resolution so that the question of ownership might be finally settled.

Long Beach, he said, has a pool worth probably a billion dollars, lying under lands ceded to the city solely for harbor purposes, parts of which were filled in and allegedly illegally alienated and sold to private interests.

"It is my firm conviction the oil is

MEXICO SELLS MILLION BARRELS TO BRITISHERS

Mexico City, Feb. 23.—Sale of 1,000,000 barrels of its oil has been made by the federal government's General Administration of National Petroleum to Cory Brothers, British syndicate. Delivery is to be made soon by 10 British tankers which will arrive periodically at Tampico. The deal was negotiated by D. A. Thomas, scion of an important London banking family.

This is the largest recent foreign sale General Administration of National Petroleum has made. It's present daily production is some 10,000 barrels, but it has about 500,000 barrels stored.

being taken by people and organizations that have no right to take it," he said.

Hinting at a possible political scandal, Scott charged that city officials have refused to sue for recovery of the lands. Both county and state officials now are seeking to secure the properties in order that they may develop them.

Regardless of where the fee title may lie, the navy department contends that submerged lands containing petroleum deposits are subject to the superior rights of the United States under either the constitutional authority to the federal government to regulate commerce or the authority to provide and maintain a navy, it was asserted by Commander Beismeyer of the Judge Advocate General's Office.

Under his authority, he said, the navy is empowered to seize the oil underlying the submerged lands whereever it may be found regardless of who may hold title to the land. He denied however, in response to questions, that the department considered its powers extended into navigable waters within a state although it was pointed out, by both members of the committee and later witnesses, that if the power of the government to sieze submerged lands in the three mile zone was conceded, it might be but a matter of time before similar power was argued with respect to navigable rivers and lakes.

R. A. Stuart, representing the Texas State Teachers Association, protested that the whole question appeared to have arisen out of a "local political" fight at Long Beach.

Drilling in the coastal waters of the state, he explained, was undertaken with the approval of the war department engineer corps, which has held that so long as navigation is not interfered with the department is without any power to prevent drilling.

Texas, he declared, in entering the union, specifically reserved to herself all her mineral rights and public lands, including those between low water mark and the three league limit. The state, he added, conceded neither that the submerged lands are unowned or that the government possesses rights superior to those of Texas.

Louisiana Would Rent

The State of Louisiana stands ready to grant to the navy department a lease in perpetuity to the whole three mile strip along its borders upon payment of a "nominal" yearly rental and the usual royalty of one-eighth for all oil which may be developed, the committee was told by Gaston L. Porterie, state attorney general.

These lands comprise a virgin field, never touched by a drill, he said.

However, he warned, while the state is willing to turn over these lands to the navy department as a lessee, Louisiana will fight attempts at expropriation with every resource at her command.

"Since the states are the owners of the bed of the sea along their coasts within the three mile limit, the making of a naval oil reserve out of that area by an act of congress would amount to a taking of the property of the states," the attorney general contended.

An explanation of the Department of Justice's attitude with respect to offshore oil fields was given the committee in a memorandum from the attorney general, following the questioning of the department's representatives as to why it was necessary for Congress to "direct" the attorney general to do something which members of the committee felt he should do under the law without urging.

The department, it was disclosed, has had no request by any department or agency of the government to institute suit to determine the ownership or possession of any submerged oil lands.

"Undoubtedly the reason no request has been made, and the reason no suit has been filed," it was explained, "is that in no legislation has the United States manifested an interest in petroleum deposits underlying submerged lands. This indicates why, before suit should be attempted, Congress should provide a legislative basis such as here proposed."

The Department of Justice participated with representatives of the Navy and Interior Departments in the preparation of the amended resolution.

Denominating the resolution as "one of the most astounding proposals" ever made to Congress, Karl Crowley, solicitor of the Post Office Department, speaking as an individual, asserted at the final session February 25 that its adoption would be "repudiation" of a treaty between the United States and one of its states.

"The Attorney General," Crowley said, "now has full and complete authority to institute suit for and on behalf of the United States to recover any of its property, but the resolution does more—it sets up findings of fact which lead to the conclusion that the submerged lands along the coast of Texas belong to the United States—and thus has for its purpose the adjudication of a claim."

If enacted, he predicted, the resolution will be held unconstitutional by the Supreme Court.

The pending legislation threatens investments other than oil, it was contended by F. W. Clements of the Santa Fe Railroad. If enacted at all, he said, the resolution should be redrawn so as not to disturb railroad and other interests which have millions of dollars at stake.

Appearing on behalf of oil operators who have unsuccessfully sought prospecting permits from the Interior Department, M. F. McCarthy of California maintained that the federal government owns the base title to the state's off-shore lands.

Joseph Cunningham, Glendale, California, operator unable to secure a federal permit, told the committee he filed the first application for a tidewater permit submitted to the interior department in 1934.

Closing argument for the opponents of the legislation was presented by William McCraw, attorney general of Texas.

"If this resolution is passed," he predicted, "it will be but the beginning of litigation that will cast a cloud upon the title of all the coastal lands of the country, and the uncertainty of that litigation will bring losses and expenses to all coast states that should not be incurred."

The proposal has taken three or four different forms, he pointed out, starting simply as a "talking proposition" and then amended "with a lot of whereases" that are without any basis in fact or reason.

There is no danger of quick depletion of our resources, he contended, quoting various pessimistic forecasts that have been made and disproven during the past 30 years. There is nothing to fear, despite the apprehension of the Navy Department, and East Texas alone, if run wide open for one day, could supply the world for three years. The known reserves today are greater than ever before.

Federal oil funds cut

Rejecting a request of the Bureau of Mines for a fund of $11,500 to permit the making of studies of crude oil in storage, the house appropriations committee on February 25 reported the Interior Department supply bill for the fiscal year beginning July 1, next, providing $253,000 for the oil and gas investigations of the bureau.

The amount recommended is the same as the appropriation for the current year, but is $7000 less than the sum provided for in the annual budget estimated.

The committee also cut $35,000 from the fund for the Petroleum Conservation Division, allowing $250,000 for the coming year. The present appropriation is $285,000, but the committee found that expenses for the first half of the current year were but $124,000, indicating that total costs for the year will be about a quarter million dollars. An increase of $3,600 recommended by the budget for geological survey operations in connection with minerals on public lands and Naval petroleum reserves was disallowed by the committee, which held the appropriation to the current figure of $315,000. The geological survey, it was pointed out, has secured substantial increases in recent years, and it is not believed the refusal of a further increase will impose any hardship.

A fund of $11,500 was asked of the appropriations committee by the Bureau of Mines to permit the carrying on of studies of market demand, found desirable as a result of the investigation of crude stocks made last year.

Trust fight urged

Wisconsin oil dealers were urged to break the "hold of the oil trust" on distribution of petroleum products by Congressman Gerald J. Boileau (Prog., Wis.), speaking last week before the annual convention of the Wisconsin Petroleum Association, a marketing organization. He urged the association to lead the fight for passage of the Bierman bill which would prohibit manufacturers or refiners of petroleum to act as distributors.

Declaring that democratic government must destroy monopoly or monopoly will destroy democracy, Congressman Boileau said:

"We must resist the greedy and short-sighted policy of those who under the guise of 'rugged individualism" are destroying the fundamental principle upon which our democracy was established. They are driving us headlong into communism or fascism—neither of which is acceptable to real Americans. If the trend toward monopoly is permitted to run its course, we will reach a point where private capital will have complete control of the industries essential to the life, liberty and happiness of the people."

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Proration Picture

[*Continued from page 13*]

allowable in effect on February 18 was assigned to the field for March 1.

In an appended table the allowables for the various districts are compared with the allowables in effect on December 18 and February 18.

Rodessa gas meters ordered by Louisiana commission

Effective at 7 a. m. March 1, all gas produced from the Rodessa field (Louiana side) shall be measured continuously by meters, according to a new order issued last week by William G. Rankin, Louisiana Conservation Commissioner.

In the new order it is provided that in gas-lift wells, the total volume of gas to be used in computing the operating gas/oil ratio shall be the total output volume minus the total input volume, and the gas limit as set forth by the conservation commissioner in the monthly proration schedules shall apply only to that volume of gas computed by subtracting the total input volume from the total output volume. All input and output gas for gas-lift operations shall be measured continuously by meters of a type approved by the commissioner of conservation and such meter records shall be furnished monthly to the commjssioner and shall be reported by leases by each operator in the field.

The order further provides that "all gas produced from the Rodessa field shall be measured continuously by meters of a type approved by the commissioner of conservation and such meter records shall be furnished monthly to the commissioner of conservation and shall be reported by leases by each operator in the field."

The order, effective March 1, also provides that each gas well producing from the Caddo Levee Board (Gloyd) or Dees-Young horizons shall be allowed to produce that quantity of gas per acre per day, which is equivalent volumetrically to the average allowables per acre per day of oil and gas combined produced from oil wells, all computed at average reservoir pressures.

North Louisiana order

Daily allowables for March were left unchanged for both the Lisbon field and the Louisiana side of Rodessa, according to the allowable orders for next month issued by the Louisiana Conservation Commission.

Rodessa's allowable will remain at 42,000 barrels, with an augmented field allowable of 66,000 barrels, the same figures as in effect in February. Acreage allotted to production is 8609.8 acres and the acreage factor was set at one acre equals 3.8328 barrels, and the bottom-hole pressure factor at one pound equals .0664 barrels. Allowables are based 50 percent on acreage and 50 percent on bottom-hole pressures.

Lisbon's allowable was left at 10,000 barrels. Allocations were made for 197 wells. The twenty-acre spacing rule is still in effect in that field. A total of 3472.3 acres were reported as proven to production. The acreage factor was set at one acre equals 2.4298 barrels and the bottom-hole pressure factor at one pound equals .01534 barrels. The allowables are based on a 75-25 percent acreage-bottom-hole pressure basis.

The allowable for the lower Marine (Bodcaw sand at 8000 feet) in the Cotton Valley field, Webster Parish, classed by the commission as a gas field although it makes large amounts of distillate, was boosted to a total daily withdrawal of 58 million cubic feet, an increase of six million feet daily. Thirty-four wells were given allocations. The Travis Peak horizon in this field, which produces only oil, and has six wells, was recently set at 300 barrels daily per well.

The commission's order left the Sligo field's Petitt (basal Glen Rose) at 600 barrels combined daily allowable for six wells producing oil from that horizon. These are the only fields under proration in North Louisiana.

Schuler output cut

The daily allowable for lower Marine (Jones sand) wells in the Schuler field, Union County, of which there are now 17, was cut 100 barrels daily per well to 700 barrels for March by the Arkansas Board of Conservation last week. No proration has yet been invoked for the Travis Peak and Permian wells as Schuler. The latter horizon has one gas-distillate well and another is in course of completion.

The allowable for the Miller County, Arkansas, extension of Rodessa, was set at 8976 barrels for March for 66 wells. The allowable for February was 10,500 barrels but the daily production has been averaging only a little over 7900 barrels for the month. Per well allowables for some wells will, therefore, be increased.

Kansas expects cut

Following a meeting of crude oil purchasers and members of the Kansas Corporation Commission at Wichita February 24 indications are the March crude oil allowable for the state will be about 6 percent below the 176,700 barrel estimate made by the Bureau of Mines.

Nominations by representatives of purchasing companies totaled 153,447 barrels daily. The figure was boosted to an estimated 165,762 barrels daily after an adjustment to include eight companies not represented at the meeting, but which had made purchases in previous months.

Representatives of Stanolind Crude Purchasing Company, Kanotex Refining Company, Phillips Petroleum Company and Texas-Empire Pipe Line Company announced those concerns were already practicing pipe line proration, having reduced their purchases from 5 to 27 percent below the allowables set up by the commission.

In Ellis County, Stanolind is purchasing only 85 percent of the current allowables, as well as 85 percent of the net allowables elsewhere in the state including underages of prior months.

Phillips is taking 80 percent. Texas Empire is taking 95 percent of February allowables, and Kanotex cut purchases 30 percent below January allowables and 27 percent below February allowed production. The latter company is expected to continue the 27 percent reduction for March. A warning that price cutting might result unless sufficient market outlet is found was voiced by one operator, who said he had received offers to sell below the market price.

California cutting

Major oil companies of California also are planning drastic reduction in production. Richfield, Shell, Texas, Tide Water Associated and Union have started cutting back, it is said. It is estimated March 1 daily production will be reduced 40,000 barrels.

Texas proposes permits for shooting-perforating

The Texas Railroad Commission has issued a notice that the next statewide proration hearing will be held in Austin on March 19.

The commission plans to take evidence on a new subject, perforating and shooting of oil and gas wells. Some reports have reached Austin that in drilling twin wells, operators have completed both wells in one horizon, especially in those instances where the other sand proved unproductive.

Testimony will be taken, the notice recites, on advisability of issuing permits to those engaged in perforating and shooting of oil and gas wells in the state to the end that they may be required to file accurate reports with the commission, in that there has and is imminence of waste in oil fields located in the state due to improper perforating and shooting of oil and gas wells.

Texas condensate hearing

The Texas Railroad Commission last week held its hearing on condensate wells and found the subject so involved that the hearing was recessed until April 29. The purpose of the hearing, as outlined by Commission officials, was to determine which wells should be classed as condensate producers, and the most important testimony was presented by Dr. F. V. L. Patton, Commission chemical engineer.

During the course of the discussion operators developed the fact that the feasible operation of repressuring and recycling operations would be indispensable to a full record, and the delay was granted to give the operators time to conduct experiments similar to those which had been conducted by Patton, who has been in the field some two months testing wells.

As the hearing began, V. E. Cottingham, Director of Production, stated that: commission records reflected in January, 1937, that there were 221 condensate wells producing 89,313 barrels of fluid with 6,399,854,000 cubic feet of gas, or producing with a gas fluid ratio of 71,600 cubic feet per barrel.

At the end of 1937, the reports for the month of December reflected that there were 342 wells producing 143,313 barrels of fluid with 9,508,420,000 cubic feet of gas, or with a gas fluid ratio of 66,000 cubic feet per barrel.

OKLAHOMA FIELDS

Two completions give new Ramsey pool three wells.

* * *

Payne County wildcat is Prue sand gas well.

* * *

Deep Stephens County wildcat fills 750 feet with oil.

Tulsa.—Two new producers in the Ramsey pool of Payne County and the probability of a third before the end of the week held attention in Oklahoma as activity again started back toward normal. Following many weeks of testing, a Stephens County wildcat was showing possibility of production from below the 9000-foot level.

Latest producer in the Ramsey pool is Mid-Continent Petroleum Corporation et al's Columbia 1, NWc SW 18-18n-2e, south offset to Ramsey 1. The test drilled to 4812 feet in Wilcox sand and washed in to flow 522 barrels of oil the first hour with gas estimated at 7,000,000 cubic feet. It is the largest of the three wells now producing on the community block. Checking level with Ramsey 1, the test found top of the Wilcox at 4780 feet.

Finding 27 feet of Wilcox sand, but running three feet lower than the discovery well, Mid-Continent et al's Brandon 1, SEc NE 13-18n-1e, west offset, came in earlier in the week to make 500 barrels of oil the first hour from between 4764 and 4791 feet. In the first four hours the well made 1926 barrels of oil and 7,600,000 cubic feet of gas. It is estimated good for 15,000 barrels of oil daily as compared with 13,500 for Ramsey 1.

Mid-Continent et al's Wetzel 1, NEc SE 13-18n-1e, diagonal southwest offset to Ramsey 1, had top of the Wilcox sand at 4762 feet and was coring below 4770 feet. Seven-inch casing was cemented at 4709 feet in Viola lime, and Simpson dense was found from 4725 to 4730 feet. The well is checking level with the discovery.

Watching Extension Attempts

With the three offsets assured producers, oil men are now turning their attention to tests getting started outside the block. One-half mile south of Wetzel 1, E. H. Moore, Inc., had completed cellar and pits for Boyd-Troutman 1, NEc 24-18n-1e. Location has been staked for E. H. Moore's Means 1, NWc 19-18n-2e, one-half mile south of Columbia 1, where it is reported operations will start as soon as Boyd-Troutman 1 is begun. West of Brandon 1, J. E. Crosbie, Incorporated, staked location for Houston 1, SEc NW 13-18n-1e. It is one-half mile from the new producer.

Three and one-half miles southwest, Helmerich & Payne's Ritchie 1, CNE NW 34-18n-1e, was drilling below 4885 feet, checking somewhat lower than wells on the community block. It had top of the Mississippi lime at 4860 feet. Marydun Oil Company et al's Moore 1, SE SW NW 17-18n-1e, due west of the block, was moving in tools. The derrick has been up several months.

Two miles west of the West Norfolk pool of Payne County, Kemp, Hart and Jones' Roberts 1, SEc NE 6-18n-5e, was making an estimated 4,000,000 cubic feet of gas daily from 3142 feet. Top of the Skinner sand was at 2091 feet and at 2990 feet the well began making gas from Prue sand.

In southwestern Lincoln County, Stanolind Oil & Gas Company and Amerada Petroleum Corporation's Strader 1, wildcat in NWc NE 8-13n-3e, drilling below 3875 feet, cored from 3637 to 3649 feet and recovered sand and shale with an odor of oil and gas.

Phillips Petroleum Company's Becker 1, NE NW SW 8-5n-10e, southwest of Calvin in Hughes County, plugged back from 6286 feet to 5620 feet and was shut down after rigging up standard tools.

Southern Oil Company's Henry 1, NWc NE 10-8s-7e, 3 miles southwest of Platter in Bryan County, reported a slight stain of oil in a core from 3280 to 3298 feet, but was drilling below 3833 feet. The well encountered dark sandy shale at 3370 feet in a core.

Ardmore Sector

Possibility that another deep area may be opening up for the southern part of the state was being watched for at Coline Oil Company's Johnson 1, SW SE NE 1-2n-8w, northwest of Marlow in Stephens County. At a total depth of 9086 feet, the well was cleaned out to the bottom and filled 750 feet with oil overnight. It swabbed 17½ barrels of oil in 24 hours. Some oil had been recovered during a previous swab-

OKLAHOMA
Completions

Note completions week ending February 19 on page 83.

Company, Well and Location	Init. Prod. Bbls.	Depth
CADDO COUNTY—		
Ohio, Lackey Acct. No. 2, ne sw nw 11-5n-9w (pb 3742)	90	4275
Magnolia, F. A. Niles 10, sw sw nw 36-6n-10w	203.5	4450
CARTER COUNTY—		
H. F. Potts, Johnson 2, se se se se 10-1s-2w	*	737
KOT Oil Co., Westheimer 7, ne ne ne ne 35-4s-2w (otd 2857)	27	2971
CREEK COUNTY—		
Lease Inv. Co., J. Burris 1, ne nw nw 1-14n-10e	19	3113
L. Stekoll, Walker 1, se nw ne 32-14n-10e	*	3477
Franchit & Mid-Continent, McKellop 1, se se se 27-16n-10e	*	3166
Tide Water, Richards 17, cne sw 4-17n-7e (pb 2760) (otd 2748)	78	2773
L. B. Jackson, Hall 2, sw sw sw nw 26-18n-8e	*	2751
Curtis Oil Co., Carr 1, se nw ne 26-18n-9e	35	2910
Galena Oil Co., Anthis 1, ne ne ne 36-18n-10e	¶2.75	2206
Deep Rock Oil Corp., Peterson 14, cn½ ne sw 33-19n-7e (otd 2470)	5	2605
GARVIN COUNTY—		
Simpson Fell Oil Co., Derdyn 10, cn½ se¼ nw 17-1n-3w	25	1824
HUGHES COUNTY—		
Dutton et al, Peters 1-A, cn½ e½ sw nw se 8-6n-10e	*	652
JEFFERSON COUNTY—		
Bridwell Oil Co., W. D. Seay "D" 5, ne ne ne sw 30-6s-5w	*	2091
MARSHALL COUNTY—		
Fred Pullter et al, Vittitoe 1, cen ne se 11-5s-4e	*	720
MUSKOGEE COUNTY—		
Robinson, Fulsom 1, sw se sw 7-13n-16e	*	2180
OKMULGEE COUNTY—		
Phillips, E. A. Moore 1, nw sw sw 31-11n-13e	*	3888
J. Garfield Buell, Whittman 1, se nw nw 4-13n-11e	*	3650
W. P. Wheeler, Fee 3, nw se 6-13n 11e (pb 3316)	25	3319
A. G. Hazlett, Tucker 9, se sw sw se 2-13n-14e	5	1297
Tide Water, Harris 10, cne sw nw 26-13n-14e	5	1603
Selby, Starr 3, se nw ne 2-14n-14e (pb 1200)	*	1455
J. E. Dow, Rentie 2-A, se se nw nw 13-14n-14e	10	1063
Adams & Riley, Bell 3, sw nw sw 27-15n-11e	75	2869
OSAGE COUNTY—		
Mrs. E. H. Green, 7, se ne ne 11-21n-11e	8	1906
Sinclair Prairie, 9, sw sw se 9-25n-6e	518	2808
PAWNEE COUNTY—		
J. V. Dunbar, Gibben 1, sw sw sw sw 8-20n-9e	*	1601
PONTOTOC COUNTY—		
Magnolia, Mayhue 3, ne se se 20-2n-6e	*	3280
Carter, Smith 12, ne ne sw 28-2n-7e (pb 2829)	6	3470
Moore, Harper 6, se nw ne 29-2n-7e (pb 4302)	33	4364
Schauers 12-A, ce½ se ne nw 29-2n-7e (pb 4330)	31	4355
Woodroff 4, nw nw se 29-2n-7e (pb 4265)	90	4403
Loval et al, H. Hardin 2-A, ne sw nw 30-2n-7e (pb 2695)	250	3650
H. Riddle et al, Fee 1, nw sw se 11-3n-5e	*	4490
POTTAWATOMIE COUNTY—		
Denver P. & R., Jordan 1, sw se sw 12-7n-4e	80	3137
Magnolia, Green 3, se sw nw 13-7n-4e (pb 3120)	50	3132
Killico, Brister 3, sw nw ne 28-7n-4e (pb 3954)	27	4135
SEMINOLE COUNTY—		
Beaver Oil, Shirk 1, sw sw nw sw 5-6n-8e	120	2982
Deep Rock, Lacy 2, ne se sw 14-8n-6e (otd 4165)	75	4198
Magnolia, Carliner 1, nw ne se 27-8n-8e (otd 3221) (pb 3952)	*	3967
TILLMAN COUNTY—		
I.T.I.O., Drumm 1, ne sw sw nw 32-2s-17w	*	3843
TULSA COUNTY—		
Anthony, Carter 5, nw se sw 33-17n-12e (otd 1742)	*	2398
Strozier, McCauley 3, sw ne sw 12-16n-11e	25	2383
WAGONER COUNTY—		
Ill. Ref. & Dillard, Mingo 2, sw sw se sw 17-17n-15e	150	1882
Lambert, Mingo 1, nw ne nw 20-17n-15e	25	1886
Sands Pet., Lovett 1, nw ne sw ne 22-17n-16e	10	875

*Failures; †Junked; ¶Million cu. ft. gas.

bing test, but majority of the fluid was mud and water with a salty taste.

Testing of Gulf Oil Corporation's Smith Estate 1, CSW SW 26-2s-3w, in the Fox area of Carter County, was delayed last week as operators attempted to free a packer stuck 30 feet off bottom. The well was recently deepened to 7920 feet in an effort to eliminate the freezing temperature of the production which had been clogging flow lines.

Development was going ahead at 6 other tests in the deep Oolitic area.

Grimes and Dickson's Laney 1, NWc 3-3s-18w, in the Frederick area, southwestern Tillman County, may be abandoned. The well took two cores in Canyon lime, producing formation of nearby wells, and failed to find production. Recovery consisted of 7½ feet of tight sandy lime with a salty taste. Top of the lime was at 3187 feet. Contract depth is 4000 feet.

Oklahoma City Sector

From the Oklahoma City area came reports that a west offset to Anderson Prichard Oil Company's Clark 1 (formerly Hollenback et al's) NWc 34-21n-6w, might be staked by Indian Territory Illuminating Oil Company, and trading of royalty around the discovery was active. Clark 1 was shut in while tanks were being erected and tubing run. Anderson Prichard took over operation of the well early last week.

South of the Seward pool in Logan County, Stanolind Oil & Gas Company and Amerada Petroleum Corporation's Blunt 1-B, CW/2 W/2 NW 26-15n-3w, at 5930 feet was bailing mud with a show of gas. No oil or water was showing. Seven-inch casing was set at 5893 feet. Carter Oil Company was moving in tools at Lydick 1, CE/2 NW NE 23-15n-4w.

W. O. Allen et al's Jackson 1, CE/2 SE NW 6-14n-3w, north of the Edmond pool in Oklahoma County, topped first Wilcox sand at 6609 feet but had no show and was drilling below 6680 feet.

KANSAS
Completions

Note completions week ending February 19 on page 83.

Company, Well and Location	Init. Prod. Bbls.	Depth
BARBER COUNTY—		
Olson, Nuckolls 1, ne ne sw 30-31s-11w	978	4295
BARTON COUNTY—		
Stanolind, Stueckemann 3, ne ne se 11-20s-11w	1103	3292
Gulf, Nicholas 1, nw sw nw 12-20s-11w	1774	3281
Nicholas 2, sw sw nw 12-20s-11w	1949	3282
Spanier 2, sw nw nw 12-20s-11w	798	3304
Magnolia, A. Roetzel 3, se nw ne 25-20s-11w	1589	3261
BUTLER COUNTY—		
Richmond Drlg., Lygriesse 1, nw ne nw 25-27s-3e (pb 3006)	6	3077
Rex & Morris, DeMoss 3, nw nw nw 8-28s-7e	30	2683
COWLEY COUNTY—		
Wixon et al, W. T. Clover 1, nw se se se 8-31s-7e	¶5	1463
Sinclair Prairie, Turner 1, ne se nw 30-32s-6e	*	3129
Dickey, K. G. & E. Dickey 1, ne ne ne 22-34s-3e	*	3790
ELLIS COUNTY—		
Murphy Oil et al, Rumsey 1, sw nw sw 23-11s-17w	2829	3366
Lario, Pearl Cress 1, ne se se 13-11s-17w	2043	3415
Shell, Rumsey 3, nw sw nw 23-11s-17w	2331	3422
Cities Service, Hall "B" 6, se nw nw 26-11s-17w	2708	3413
ELLSWORTH COUNTY—		
Cities Service et al, Schroeder 1, nw ne nw 29-17s-9w	2644	3215

Torry and Feaster test may extend Sittner pool.

* * *

Northwest extension try of South Andover fails.

Company, Well and Location	Init. Prod. Bbls.	Depth
GREENWOOD COUNTY—		
Hutchinson O&G, Wygle 1, ne nw sw 12-27s-10e (pb 1900)	35	1902
McPHERSON COUNTY—		
T. C. Johnson et al, Shaw 4, nw ne sw 21-19s-1w	237	3427
Continental et al, Huxman 6, ne nw nw 29-21s-1w (pb 3343)	528	3418
RENO COUNTY—		
Pulse et al, Payne 1, cn½ nw ne 4-22s-7w (otd 3440)	*	3880
Skelly et al, Gorham 1, sw sw se 32-25s-10w	*	4403
RICE COUNTY—		
Continental, Williams 1, ne ne nw 13-18s-8w	2612	3238
F. Hollow, Stout 1, ne se ne 6-18s-10w	2304	3056
RUSSELL COUNTY—		
Shields, Letsch 4, ne se se 27-14s-13w	4543	2859
Skelly, C. Colliver 1, ne ne se 28-14s-13w	1594	2909
Nat'l Ref. Reinhardt 4, ne se ne 19-14s-14w	471	3075
Central Pet. Co., Dortland "A" 2, sw nw nw 4-14s-15w	380	3078
Nat'l Ref. Co., E. Reinhardt 3, ne nw ne 36-14s-15w	468	3178
Carter, Detrich 1, sw sw sw 8-15s-13w (otd 2980)	1750	3211
SEDGWICK COUNTY—		
Continental, Goodrich 5, nw nw sw 16-25s-1e	513	3330
STAFFORD COUNTY—		
Stanolind, G. W. Walker 1, ne ne sw 33-21s-2w	1638	3625
L. E. Douglas, B. Hullman 1, sw sw sw 5-22s-12w	*	3841
Stanolind, F. W. Hainkle 1, ne ne ne 5-22s-12w	*	3657
Lario et al, McNaghten Loan Co. 1, sw sw sw 22-24s-13w	*	4154

*Failures; †Junked; ¶Million cu. ft. gas.

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Wichita.—Possible extension of the Sittner pool of Stafford County one mile northwest is being watched for at Torry and Feaster et al's Mueller 1, SEc 29-21s-12w. It had top of the Siliceous lime at 3594 feet and cored to 3600 feet, the total depth. The recovery was saturated with oil. Casing has been cemented on top of the lime.

Atlantic Refining Company et al's Hitz 1, SEc NE 12-22s-13w, was abandoned last week at 3723 feet in Siliceous lime. Some shows had been encountered in the test, but were not sufficient to justify testing. It is one mile east of Drach pool, opened in 1937. One mile south of the Drach pool, Hamilton and Roy et al's Hitz 1, NEc NW 23-22s-13w, was coring below 3836 feet in Siliceous lime with nothing showing. It had top of the formation at 3832 feet.

Outpost Dry

National Refining Company's Fee 2, CNE SE 36-27s-2e, northwest of the discovery well in the Andover South pool of Sedgwick County, drilled from 2021 to 2082 feet in Stalnaker sand and failed to find gas. The discovery well, 450 feet to the southeast, had 7,600,000 cubic feet of gas in the sand. National's Pray 1, SW NW SW 31-27s-2e, east offset to the discovery which extended production over the line into Butler County a few weeks ago, had 14,000,000 cubic feet of gas from the Stalnaker. It was completed as an oil well, making a potential of 204 barrels of oil from 3107 feet in Wilcox sand.

Carter Oil Company was preparing to abandon Andress 1, CNE SE 2-21s-13w, 4 miles north of the Gates pool in Stafford County, at 3608 feet. Spotted shows were had in a core from 3551 to 3554 feet in Siliceous lime, but acidization with 1000 gallons failed to get any results. It topped the lime at 3535 feet.

Growth of Kraft pool of Barton County continues with Republic Natural Gas Company's Bloomer 2, NWc 14-17s-11w, preparing to drill in after running casing to top of the Siliceous lime at 3326 feet. The test is a west offset to a recent producer which extended the pool one mile southeast.

Four miles northeast of the Zurich pool, Rooks County, Glimac Oil Company et al's John Hancock Life Insurance Company 1, NW SW SW 21-10s-18w, found Topeka lime at 3058 feet and drilling continued. Discovery well for the Zurich pool was drilled to 3349 feet in Kansas City lime, topped at 3285 feet.

One mile southeast of production in

the Halstead pool, Harvey County, National Refining Company's Brown 1, NW SE NE 22-23s-2w, drilled to 3515 feet in Siliceous lime and was abandoned. The test found the lime at 3501 feet but failed to show. Wells in the pool proper, producing both oil and gas, are in Mississippi chat, found from 2900 to 3000 feet.

A poor showing was reported for The Texas Company's Lowry 1, CNL NW SW 2-17s-13w, which swabbed one barrel of oil per hour from 3350 feet in Siliceous lime after acidizing with 1000 gallons. The well is north of the Ainsworth South pool of Barton County.

NORTH TEXAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ARCHER COUNTY—		
M. F. Brown & Kriss, Campbell 6, blk 11	35	1239
W. T. Hutcheson, Jr., Wilson-McCrory 5, sec 121	*	1212
Jirik et al, Wolfe 1	*	653
Westmount Oil Co., Dempsey 6, sec 10	10	1108
CLAY COUNTY—		
Bridwell Oil Co., Thornberry 1, blk 6	145	1121
Thornberry 2, blk 6	202	1112
Sussex Oil Corp., Shumake 9, blk 3	18	1150
COOKE COUNTY—		
Merrick, Inc., Stelzer 15	*	864
Pace et al, Winstead 5-B	300	1221
Temples et al, McArdle 1	*	1601
Texas Co., Trubenbach 4	124	791
FOARD COUNTY—		
Texas Co. et al, Johnson 14	¶1¾	3779
HASKELL COUNTY—		
S. B. Roberts & Co., Hendrick 1	12	1721
JACK COUNTY—		
Bennett Pet. Corp., Mantooth 1	449	3197
Cockburn et al, Mantooth 1	500	3303
R. D. Compton Oil Co., Henderson 14, blk 2	*	360
Henderson 15, blk 2	100	340
Hanlon & Buchanan, Meyers 1	55	3453
Ohio Fuel Supply Co., Birdwell 1-B	154	2984
MONTAGUE COUNTY—		
Continental, Howard 39	11	990
Howard 40	19	1410
WICHITA COUNTY (K-M-A)—		
Burk. Roy. Co. et al, Warren 1, blk 32	*	3946
L. T. Burns & McCutchen, First Nat'l Co. 1, blk 27	664	3847
Christie-Hickman Drl. Co., Bolding 2, blk 23	2400	3731
Jones et al, Hodges 1, lot 7	122	3977
Kadane-Griffith Oil Co.-King-Perkins-Cullum, Mangold 1, blk 39	1000	3832
King Oil Co.-Perkins-Cullum, Mangold 3, blk 38	816	3812
Petroleum Prod. Co., First Nat'l Co. 85, blk 27	718	3842
Siebold & Harvey, Munger 1-a, blk 24	1755	3885
Stump et al, Bishop 1	*	4043
Sunray Oil Co., First Nat'l Co.-Munger 1, blk 28	162	3883
Mangold 1, blk 38	961	3760
Wallace et al, Logan 1-B, blk 21	1056	3745
Wilson-Ligon & L. T. Burns, Munger 1, blk 31	672	3881
Joe A. Worsham et al, Waggoner Bros. 1, sec 13	776	3870
WICHITA COUNTY—		
Jennings Drl. Co., Jennings 2-B, sec 12	*	1816
Pois & Schultz, Foster 4-B, sec 1	*	1281
Foster 9-C, sec 2	*	986
Proctor et al, Foster-Allen 25-A, sec 1	101	1540
Foster-Allen 26-A, sec 1	45	1550
WILBARGER COUNTY—		
Kriss & Wiggins, Waggoner 1, sec 48	*	3100
YOUNG COUNTY—		
Frank Bennett Pet. Corp., Robinson 2	3000	3632
Black Gold Oil Co., Alberts 1, sec 1987	150	4161
Williamson 1, sec 456	888	3919
Pitzer, West & Lion Oil Ref. Co., McComas 3, sec 444	250	3924
Zwelfel et al, Buford 2, sec 1	20	3456

*Failures; †Junked; ¶Million cu. ft. gas.

NORTH TEXAS FIELDS

Ellenberger strengthened as source of K-M-A oil.

* * *

Clay County wildcatting booms under K-M-A influence.

Wichita Falls, Texas.—The Ellenberger lime strengthened its position as a potential source of production in the K-M-A district when a wildcat situated 4-1/3 miles northwest of the deep field cored oil saturated lime before encountering water. F. W. Merrick, Incorporated et al's W. T. Waggoner 1, SWc NE H&TC Section 35, Block 5, logged saturation in cores at 3733-3802 feet, followed by water at 3802-14 feet. Hole will be plugged back for a production test. This wildcat reported top of K-M-A lime at 3603 feet, with nominal oil saturation in Strawn at 3595-3615 feet and 3635-45 feet. Top of Ellenberger was called at 3745 feet, indicating only 142 feet of Strawn section, with the lower portion sharing in the saturation.

Three Others Wet

Three previous tests carried to the Ellenberger within the productive limits of the K-M-A Strawn zone yielded water. Rathke Oil Company et al's Burnett-Gulf 1-A, northwest outpost producer, encountered water at 3738 feet, near the top of the Ellenberger, and is showing for a small pumper after plugging back to 3692 feet for a nitro shot. It is an offset to Gulf Oil Corporation's Burnett 43 ,abandoned as a failure in 1929 after logging Ellenberger at 3715-4295 feet, with an elevation of 1124 feet. Discovery well of the deep field logged Ellenberger at 4290-5430 feet, carrying water, and plugged back for completion in the Strawn.

Heyser, Heard and Clardy, Inc.'s Fassett-Tuttle 1, SWc SA&MG Section 3, A-267, on north bank of the river, was listed as a doubtful producer for the northeast edge of the field. Hole filled 2000 feet with fluid in 12 hours after drilling plugs from 7-inch at 3993 feet, with a total depth of 4008 feet, or 3020 feet sub sea. Volume of salt water, previously indicated by core analysis, had not been determined. It occupies a low structural position, with top of lime called at 3814 feet.

New Peak in Locations

Field operations in the K-M-A area have gained steadily since the drilling boom reached important proportions last November. A greater number of rigs have been placed in service each week. Current field reports account for 142 completed wells, including 18 pumpers, in the Strawn, and 187 additional operations. The latter includes 55 tests drilling with rotary below the surface pipe and above the final casing point, and 60 tests, using machines or rotary rigs, were in process of completion, else waiting for cement to set around the oil string. Surface pipe was in place on 8 additional tests. Derricks and rigs accounted for 17 operations. Locations reached a new peak of 47 due to inclement weather and floods preventing normal progress on first reports carried over from the previous week.

Potential rating of completed wells is destined to greatly surpass the actual daily yield as is the case in virtually all prolific areas within the state, due to shortening of the test period. Recent completions have been subjected to only 3 hours official gauge, and invariably the wells are shut in prior to the test to build up pressure. Operators foresee the need for high potentials when field allowables are given consideration at monthly proration hearings.

First Major Completes

The Texas Company became the first major to register a completion in the deep sand zone in completing First National

LEGAL NOTICE

The Board for Lease of Eleemosynary and State Memorial Park Lands of the State of Texas will receive sealed bids until 10 o'clock a.m. March 4, 1937, in the General Land Office at Austin, Texas, for oil and/or gas leases on the following: approximately 540 acres of the Abilene State Hospital Lands, Taylor County, Texas; and approximately 890 acres of the Wichita Falls State Hospital, Wichita County, Texas. For further information address **Wm. H. McDonald, Commissioner General Land Office, Austin, Texas.**

Company 23, SEc Lot 8, Block 26, flowing 127 barrels oil on 3-hour test through tubing from broken pay at 3661-3835 feet. Acid was used in saturated lime at 3661-74 feet with nominal results. This company's First National Company 24 also used acid in lime at 3611-85 feet, resulting in small heads, and logged base of the lime at 3760 feet.

Lower production allowables for the K-M-A deep wells, currently restricted to 58 barrels daily, may result from the allocation of a quota of 7340 barrels for the March period. Volume of completions will gain rapidly during the coming month, and production will exceed this figure in spite of Sunday shutdowns.

Production trends to the southwest of the field and deeper into Archer County appeared doubtful when Lewis Production Company's W. C. Frey 1, Block 17, Palo Pinto County School Lands, logged top of lime at 3818 feet, with an elevation of 1071 feet. It is 68 feet lower on structure on this marker than the nearest producer, situated 2-1/3 miles to the northeast. Frey 1 was drilling at 3870 feet with no saturation recorded. Everts et al junked a test in the Strawn in August, 1934, and later drilled a salt water well on an offset location. These failures separate Frey 1 from production.

Expand into Clay County

Clay County is in line to receive the most wildcat projects as a sequel to the Strawn development at K-M-A. Operations are underway on five deep tests, and a greater number are pending. L. T. Burns et al are credited with plans for two tests, including a second try for the H. Sanzenbacher land. Fee land held by Burns near Joy is slated for a test. Frank H. Harrison et al assumed a 4500-foot drilling obligation in acquiring a 2950-acre block, centering around Section 6, Montague County School Lands, A-307, about three miles east of the old Petrolia field. W. H. Gant et al contracted to drill a 6000-foot test and paid a bonus of $5 per acre for 7400-acre block near Huggins Switch after extensive geophysical operations.

Gant et al's C. M. Worsham 6, near SEc NE H&TC Section 37, Block 4, north outpost for the Worsham pool, eastern Clay County, flowed 15 barrels of oil per hour natural through ¼-inch choke from sandy lime at 3934-42 feet. It has an elevation of 981 feet. Gant et al have three flowing wells in the 3900-foot zone, and two in the 3300-foot sandy lime, with an allowable of 290 barrels daily on the new proration schedule.

Phillips Petroleum Company's W. T. Waggoner-Barger 1, NE SW SW H&TC Section 11, Block 14, northeastern Wilbarger County projected 6000-foot wildcat, tested half bailer free oil from sandy-lime topped at 2849 feet, and was drilling at 2865 feet. The company assembled a 3000-acre block after conducting geophysical surveys.

Humble adds 6400 barrels to runs from Panhandle

Humble Pipe Line Company has boosted its crude runs from the Texas Panhandle to about 20,000 barrels daily by absorbing 6400 barrels daily that was formerly handled by Phillips Petroleum Company and Magnolia Pipe Line Company in Gray and Carson Counties. Less than 300 barrels of the daily runs by Humble Pipe Line Company represent controlled production.

WEST TEXAS FIELDS

North portion of Permian Basin area is more active.

* * *

Hurried try for more Bohago oil results in three failures.

Midland, Texas.—West Texas is maintaining its position as one of the most active drilling centers, with wildcats and semi-proved locations accounting for a large percentage of the total operations. Development is distributed among a greater number of fields and pool than heretofore. No single area can qualify as having a drilling boom under way, although Goldsmith field, Ector County, continues to maintain the most active rigs.

The north portion of the Permian Basin is forging to the front in activity as well as crude source. Yoakum County portion of the Wasson structure is securely entrenched with a long term drilling program, with one concern holding lease on three proved sections obligated to carry on continuous developments. Bennett field, Yoakum County's oldest oil area, is experiencing competitive drilling that will result in all inside locations being taken care of this year, with excellent prospects of maior extensions.

Hockley County's single field will become one of the active points in the north basin within a few months. A two-mile north extension scored recently by Sid Richardson et al's Slaughter 1 requires three offsets. The same number of offsets will follow the completion of producers from Gulf Oil Corporation's Gordon and Mallet outposts, which are changing to standard tools after landing seven-inch pipe near the 4755-foot level. Structural position of both is favorable for production. They were carried to the casing point in 28 days.

Three Negative Results

Efforts of three tests situated southeast of the Bohago one-well pool, Yoakum County, to perpetuate short term leases with production brought negative results the past week. Bohago Oil Corporation & Bond Oil Corporation's J. L. West 1 tested dry at 5302 feet, or 1638 feet sub-sea, then recovered oil-saturated lime in deepening to 5316 feet. Another swabbing test was scheduled. Ohio Oil Company's Claywater 1, highest structurally of the trio, swabbed only 25 barrels fluid daily, with 50 percent BS&W, after using 5000 gallons of acid at 5264 feet, or 1605 feet sub-sea. It will be deepened. Gulf Oil Corporation's Dixon 1 was counted out as a prospect in drilling to 5265 feet, or 1627 feet below sea level. No saturation of any consequence appeared in cores.

1½-Mile Extension

Expansion of the Yoakum County section of the Wasson field 1½ miles to the southeast materialized when Shell Petroleum Corporation's Baumgart 1-C, proved capable of commercial production when swabbed down at 5018 feet, with an elevation of 3580 feet. The lime section will be acidized to try for flowing production.

Ordovician prospecting in the south

K-M-A will get large natural gasoline plant

Wichita Falls, Texas.—Construction of a large natural gasoline plant, representing an investment of about $500,000, will be started shortly in the K-M-A field by Phillips Petroleum Company and Sunray Oil Company. The jointly owned project will be located on the Mahgold land, where the most prolific wells have been completed in the Kadane sand section of the Strawn.

Gas produced with the high gravity oil from the K-M-A deep zone yields about 2½ gallons per 1000 cubic feet, and is expected to register a greater yield after the head is taken off the field.

Deep Oil Development Company is operating a combination gas recycling and natural gasoline plant on its discovery lease, but the capacity is rated at only 1,000,000 feet daily.

Hanlon & Buchanan, Inc., Tulsa, and Arab Gasoline Company, Eastland, Texas, have made surveys of the field, but have withheld decision as to whether plants will be erected.

TEXAS PANHANDLE Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CARSON COUNTY—		
Magnolia, Fee (244) 34.....	232	3154
GRAY COUNTY—		
Cady-Conner & Crenshaw, Holmes 2	411	3290
Cambrian Oil Co., Cole-East 1....	705	3274
Gibson Oil Corp., Combs-Worley 3-A	210	2973
King Oil Co., Baer 3-C.....	320	3281
Magnolia, E. Hagard 9.....	278	3291
HUTCHINSON COUNTY—		
Alamo Oil Co., Whittenburg 1-E...	287	2706
Drilling & Explo. Co., Pond 4.....	577	3085
E. E. Watkins 14	515	2944
Smith Bros. Ref. Co., Herring 1....	401	3186
WHEELER COUNTY—		
Hugail Oil Co., Binkley 7.....	*	2475
North Fork Oil Co., Jackson 5.....	*	2282

*Failures; †Junked; ¶Million cu. ft. gas.

part of the basin was void of important developments the past week. Magnolia Petroleum Company and Tex-Mex Petroleum Corporation's McKee 1-A, northern Pecos County, was drilling in green shale at 5354 feet with cable tools. Seven-inch pipe was lowered to 5320 feet, cutting off a small show passed up in the Simpson.

Sid Richardson and Mallison's Brown 1, Reeves County wildcat, developed sufficient gas from a Delaware sand section at 4478 feet to lodge tools. Top of the sand was called at 4262 feet, with an elevation of 2686 feet. Delaware oil areas in the district yield production from the upper portion of the sand.

WEST TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CRANE COUNTY (Gulf-McElroy)—		
Gulf, McElroy 168	1410	2906
McElroy 169	720	2985
ECTOR COUNTY (Foster)—		
Barnsdall, Foster 8, sec 13	1092	4170
Schermerhorn Oil Corp., Johnson 2-B	1095	4125
Sinclair Prairie, Johnston 4, sec 7	448	4270
Superior, Cowden 3	996	4260
ECTOR COUNTY (Goldsmith)—		
Amerada, Cummins 6	720	4249
Cities Service, Cummnis 7-B	982	4250
Dunning Jr. Est., J. Slator 2	531	4284
Gulf, Goldsmith 70	1192	4205
Humble, Scharbauer 6-B	1723	4255
Magnolia, Slator 3	412	4285
T. P. C&O Co., Scharbauer 13	1956	4256
ECTOR COUNTY (Harper)—		
Barnsdall, Cowden 2	957	4186
M. B. K. Drl. Co.-York & Harper, Cowden 1	828	4265
Mid-Continent, Cowden 2	933	4240
Shell, Cowden 6-B	346	4270
Pantex Oil Co. (was Amtex Pet. Corp.), Cowden 3	1181	4271
Wentz et al, Parker 4-D	1809	4230
ECTOR COUNTY (Jordan)—		
Oil Well Drl. Co., Connell 2	549	3634
ECTOR COUNTY (North Cowden)—		
Sun, Wight 5-B	512	4230
GAINES COUNTY (Wasson)—		
Continental, Langdon 1-43	368	4975
GAINES COUNTY (Wildcat)—		
A. G. Carter, Conoco & Plymouth Oil Co., Giesecke 1	*	5800
HOWARD COUNTY—		
Continental-Group 1 Oil Corp., Settles 2-B	*	2631
Magnolia, Chalk 4	528	3010
Sinclair Prairie, Dodge 53	330	2770
Jones 1	*	3060
JONES COUNTY—		
Guitar Trust Estate, Fee 11	122	2003
MITCHELL COUNTY—		
Standard (Texas), Foster 1 lse. 6	*	3090
PECOS COUNTY (Wildcat)—		
Aero Gas Ref. Co., Johnson-Skelly 1-a	*	2710
PECOS COUNTY (Yates)—		
Stanolind-Conoco, Yates 21	2604	1616
SUTTON COUNTY—		
Ordovician Oil Co., Evans 1	*	4188
UPTON COUNTY (McCamey)—		
Cardinal Oil Co., Wooley 11	127	2174
Gulf, Rogers 11	446	2198
WARD COUNTY—		
Gulf, Hutchings 96	1439	2760
Estes 70	1411	2686
O'Brien 91	494	2771
Estes 80	1410	2689
Lynch et al, Himmel 3-B	183	2390
WINKLER COUNTY (Gulf-O'Brien)—		
Adams, Hitchcock & Bradley, Sealy-Conoco 7	364	3161
WINKLER COUNTY (Kermit)—		
Humble, R. Colby 27-A	287	3082
McCutcheon 11	226	3000
Magnolia, Walton 129	233	3210
Walton 130	211	3211
Walton 131	1002	2945
WINKLER COUNTY (Keystone)—		
Gulf, Keystone 24	731	3500
YOAKUM COUNTY (Bennett)—		
T. P. C&O. Co., Bennett 4	2168	5275

*Failures; †Junked; ¶Million cu. ft. gas.

EAST TEXAS

Talco Lower Trinity test finds formations higher

Tyler.—Ajo Oil Corporation et al's Sanders 1, second Lower Trinity test for the Talco field, logged top of first anhydrite at 5151 feet with an elevation of 365 feet and is 265 feet higher on that marker than a deep failure on the extreme east end of Paluxy producing zone. Drilling was in progress at 5250 feet, according to late reports. Sanders 1 is on a 4-acre site and north of the Paluxy fault.

In Franklin County, Magnolia Petroleum Company's Chapman 2, earlier deep test, showed free oil in Lower Glen Rose at 5571-6508 feet, but did not make a producer, after plugging off water at 5643-61 feet.

Stanolind Oil & Gas Company and Ramsey Petroleum Corporation's Norris 1, Sub-Trinity wildcat for the Thornton fault, Limestone County, was coring at 8875 feet. Top of Lower Marine was called at 7595 feet, and first white lime, or dolomite, at 8525 feet, with an elevation of 528 feet. Minor shows logged since reaching the Marine beds have not warranted testing.

Atlantic Refining Company buys East Texas wells

According to a statement by officials of The Atlantic Refining Company, Dallas, Texas, last week, the company is ready to close a deal involving 26 oil wells and 7 tracts in the East Texas field.

The sale represents one of the largest cash considerations recorded in recent months for the field, a total of $725,000 under contract to be paid for the production and leases. The property is being acquired from American Liberty Oil Company, (Toddie L. Wynne, trustee.)

Tracts and producers involved are as follows: W. P. Brightwell lease with 4 wells, Winn survey, Rusk County; Frederick "A" lease with 8 wells and Frederick "B" lease with 1 well, Ximines survey, Rusk County; Elder "A" lease with 6 wells and Elder "B" lease with 1 well, Van Winkle, Gregg County; Barton lease with 2 wells, Van Winkle survey, Gregg County; and Kilgore School Block No. 8 with 4 wells, Van Winkle survey, Gregg County.

Texas permits drop

The Texas Railroad Commission last week granted permits for drilling 197 new wells in Texas, 121 less than were approved the week before.

One permit was granted in Cherokee County, the only one approved in the East Texas field. East Central Texas operators reported seven new locations.

There were 43 permits granted in West Texas including 17 in Ector County, while West Central Texas listed 11.

Operators in the Gulf Coast area were granted 41 permits, while there were 19 listed from Southwest.

There were 56 new locations reported in the North Texas area, including 29 in Wichita County. Nineteen permits were approved in the Panhandle.

EAST TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
JOINER AREA—		
Arkansas F. O. Co., Wheelis 19 (80.72-ac)	4000	3648
Champlin & Bass, Alford 6 (6.95-ac)	7300	3767
Ebony Oil Co., Deason Bros. 10 (25-ac)	3600	3684
Fleming, Tr. (was E. V. Ball), Brooks 3 (1-ac)	2000	3664
Gen'l American Oil Co., Thompson 13 (7-ac)	7400	3750
Kennedy et al, Johnson 2 (13.67-ac)	*	3810
Humble, Florey 12-A (79½-ac)	10,000	3692
DeGuerin 20 (134.3-ac)	9800	3680
Williams 8 (52.94-ac)	5400	3707
Marr Drl. Co., Gossett 7-a (33.8-ac)	300	3672
Massad et al, Cooper-Cansler 2 (2.2-ac)	4000	3704
Ohio, Cross 85 (814.54-ac)	3400	3640
Shell, Brooks 20-A (176.4-ac)	1800	3735
Tide Water Associated, Pinkston 24 (135-ac)	7600	3775
KILGORE AREA—		
Gen'l American Oil Co., Douglas-Shell 19 (137.93-ac)	2600	3663
Gen'l Crude Oil Co., Scott 12 (37½-ac)	6600	3655
Gulf, Brightwell 10 (50-ac)	7200	3640
Goyne 5 (30½-ac)	9500	3612
Houston, Thompson 6 (40-ac)	6700	3674
Humble, Sexton 20-A (137.48-ac)	1440	3691
Jes Bob Oil Co. (was Tom Potter-J. M. Crane), Anderson 4 (4.91-ac)	80	3554
Lee et al, Carter 3-B (32.45-ac)	1200	3589
Magnolia, Bradberry 17 (90-ac)	7000	3665
Radford 12 (75.05-ac)	9100	3600
Potter Bros.-Aaron Cohen, Kilgore Negro Baptist Church 2 (2.12-ac)	900	3545
Potter Bros.-T. L. James & Co., James 2, blk 152	500	3535
Roosth & Genecov, Young 2, blk 137	1500	3540
Stanolind-J. E. Crosbie, Powers 12 (90.91-ac)	6000	3681
Sun, Morton 30 (336.24-ac)	3000	3497
Trapp et al, King 5 (2.8-ac)	2500	3575
LONGVIEW AREA—		
Atlantic, Castleberry 9 (37.8-ac)	6800	3724
Dean Bros.-B. F. Phillips, Monk 1 (10.6-ac)	20	3714
Gen'l American Oil Co., Bumpas 6-b (14-ac)	8000	3514
Wells 15 (91.4-ac)	6600	3725
Humble, Killingsworth 19 (99.7-ac)	9000	3618
Sheppard 11-A (57.54-ac)	7700	3677
Magnolia, Beavers 11 (73¾-ac)	9300	3517
Margay Oil Corp., Christian 12-B (16-ac)	9400	3655
Monte Oil Co., Smith 9 (50-ac)	2400	3680
Smith 10 (50-ac)	3000	3673
Nicholson et al, Fee 6 (460-ac)	60	3728
Phillips et al, Victory 2-B (3¾-ac)	1500	3618
Shell, Hampton 24 (168-ac)	8200	3644
Sinclair Prairie, Akin 20-B (100-ac)	10,000	3632
Stanolind, Christian 8 (27.48-ac)	7900	3668
McKinley Bros. 59-B (57.91-ac) Acct. C	4000	3654
Sun-Seaboard, Akin 29 (163.4-ac)	9900	3613
Haynes 40 (203-ac)	8600	3682
Tide Water Associated, Sheppard 19 (114.36-ac)	8800	3667
Woods et al, Mackey 4 (25-ac)	1200	3731
HENDERSON COUNTY (Cayuga)—		
Harder & Turner, Barton-Stanolind 1	1500	4045
HENDERSON COUNTY (Flag Lake)—		
DeArman, McMillan & S. Hunt, Dawdy-Texas Co. 1	*	3105
TITUS COUNTY (Talco)—		
Humble, Kirkpatrick 4 (44.91-ac)	193	4336
BOWIE COUNTY—		
King Oil Corp., Ames 1	*	4480
CHEROKEE COUNTY—		
Merica Oil Co., Cherokee Dev. Co. 1	*	5333
MARION COUNTY (Rodessa)—		
Heyser, Heard & Clardy, Henderson B-1, U. Ewing sur	479	6050
Ark. La. Gas Co., Houston 3, A. de los Santos Coy sur	450	6083

*Failures; †Junked; ¶Million cu. ft. gas.

SOUTHWEST TEXAS

Find two Frio sand fields, two prospects in Lower Coast.

* * *

Valley discovery wells make distillate on production tests.

Corpus Christi.—Two new Frio sand oil fields were on production and two more are in prospect in the South Texas Gulf Coast. Jim Wells and San Patricio counties each have a producing field and a prospective productive wildcat.

East White Point

Plymouth Oil Company's Mrs. F. Brigham et al 1, opener of the East White Point area, San Patricio County, was flowing at the rate of about 250 barrels of fluid per day through 9/64-inch choke and showing pressures of 850 pounds on tubing and 1050 pounds on casing. The well is making an average of 92 percent 36.2 gravity crude and the remainder water, believed to be wash fluid. The test logged sand section 5630-65 feet, casing being set on bottom and perforated at 5661-64½ feet. It is in Section 62, Pauls Subdivision, 8 miles southwest of Taft and 2 miles east of White Point field. It is believed to be entirely separated from the White Point area by faulting. The test is just north of Nueces Bay but the structure is not expected to extend far enough to cause marine drilling. Plymouth Oil Company and Benedum and Trees hold the majority of the acreage in the vicinity of the well, 3200 acres, but outside leases are sufficient in nature to indicate an active drilling campaign.

Jim Wells Strike

The second new field of the week was Rowan & Hope, Incorporated's Robert Adams 1, block 28, Waldron subdivision, Section 19, about one mile northwest of Alfred in Jim Wells County. The test, originally drilled to 5509 feet, is producing from perforations at 3224-29 feet, sand having been logged 3223-34 feet. It flowed 125 barrels of 47.3 gravity oil per day through 5/32-inch choke, showing pressures of 125 pounds on tubing and 340 pounds on casing. Shut in while storage was being erected, pressures built up to 280 pounds on tubing and 350 pounds on casing. This well is on trend with several failures drilled on the Alfred Prospect, most of which carried oil and gas shows. The block is well split up among companies and independent operators, hence an aggressive program would result should the sand prove of consequence.

Also in Jim Wells County, H. H. Howell's second test southwest of Alice is attempting completion. Goldapp 1, La Vaca Grant, is bottomed at 3634 feet with open hole 3612-34 feet. Perforations were made at 3551-61 feet, but only two shots went off. A 5-foot section just above this level was shot with 10 shots. Other perforations are reported to have been made. The test now is flowing oil, gas, several kinds of water and mud, likely due to the fact that none of the perforations have been sealed. The test may be reworked before completion can be effected. From the section of sand below the casing seat, the well is credited with flowing 69 barrels of fluid through ¼-inch choke in 12 hours, 35 percent being 23 gravity oil.

San Patricio Prospect

The fourth prospective field is in San Patricio County on the Gregory prospect, where several 7000-foot failures have shown oil and gas. The prospect is on faulting projecting in the direction of the deep McCampbell field. A. L. Bob was reported awaiting casing for J. F. Green Estate 1, Williamson Survey, after running electric formation tester to 7100 feet. The well encountered a number of shows which will warrant testing. He said that the wildcat had cored sands as follows: 4416-56 gas, 6320-36 8-foot recovery showing oil, gas and distillate; 6696-13½, gas and oil odor; 6714½-15½, gas odor; 6736-42, good gas odor; 6774-75, gas odor; 6798-6814, gas and distillate odor; 6814-26, gas odor; 6828-34, gas and distillate odor; 6834-54, gas and distillate; and 6878-98, gas and distillate odor.

Paleontology on Bob's J. F. Green Estate 1 placed the top of the Round Marginulina at 6000 feet, Flat Marginulina, 6125 feet; Frio, 6525 feet.

Turkey Creek field, Nueces County, has one outpost which gives promise of extending production. C. Andrade III's John Dunn 1, 2800 feet southeast of production, is reported to be on the upthrow side of the fault and is coring for the 5800-foot Douglas sand. To the southwest and west, dry holes have defined producing limits to the field.

Saxet Heights, Nueces County, which loomed as an important area as a result of the discovery of deeper sand at 5100 feet in the Hetrostegina, is not doing so well with abandonment to the east of the discovery and a failure to the north.

SOUTH TEXAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
SAN ANTONIO DISTRICT		
CALDWELL COUNTY—		
Diamond, Byrd Est. 2 (Luling)	50	2085
Golden West, Malone 5 (Salt Flats)	*	lcn.
Leggett, Hardeman 1 (Luling)	30	2190
Martell, Conley 8 (Salt Flats)	40	2680
Gray 1 (Salt Flats)	50	2670
Millican, Norman & Reed, Lampkin B-2 (Luling)	65	2115
Philtop, Dorn 3 (Luling)	249	2077
Taylor, Grady 1 (Luling)	*	2170
MEDINA COUNTY—		
Wagoner, Medina Irr. Farms A-13 (Chicon Lake)	1	243
LAREDO DISTRICT		
DUVAL COUNTY—		
Cartter-Rubsamen, Peters 1, Sur. 66	*	3306
Continental, Sevier 21-A (Driscoll)	300	3365
Cox & Harmon, Hoffman (Hoffman)	127	2760
Dovre, Hagist 1 (Seven Sisters)	*	1748
Government Wells, Lundell 17 (Lundell)	215	1507
Humble, White 50, (S Government Wells)	25	2329
Magnolia, DCRC 16 (Piedra Lumbre)	90	2046
Glen McCarthy, Placker 2 (N. Sweden)	175	5340
G. G. Mortimer, W. R. Peters C-1 (Peters)	*	1850
Navarro, M. Rossi B-3 (N. Sweden)	500	5379
Southwood, M. Rossi A-4 (N. Sweden)	425	5350
Standard of Kansas, M. Rossi 13 (N. Sweden)	500	5603
McMULLEN COUNTY—		
Marion, Lark 2 (Calliham)	30	1065
STARR COUNTY—		
Graham, Yturria 2 (Samfordyce)	150	3058
Transwestern, Slick School 1, sec 266, opens Rincon field (perf 4312-30)	¶5 & 1	6862
WEBB COUNTY—		
Verne Clopton, A. M. Bruni 1 (Cole Bruni)	*	3507
Colton-Lester-Mitchell, Inc., F. Lopez 1, sec 55	*	2809
Cox & Hamon, Wise 5 (Killam Oilton)	120	2202
Daugherty & Lipscomb, Garcia 2 (Killam Oilton)	100	2005
Houser & Rosenberg, E. Montalvo 1 (Killam Oilton)	250	2005
E. Montalvo 2 (Killam Oilton)	200	2016
Killam, Garcia 35 (Killam)	150	1983
Garcia 36 (Killam)	100	2504
Moore & Meaders, Garcia & Villareal (Oilton)	*	2337
Singleton, Villareal 1 (Oilton)	175	1909
Smith & Hamil, Martin 11 (Oilton)	45	1896
Windsor Oil Co., McLandrich 1 (Killam Oilton)	75	1942
McLandrich 2 (Killam-Oilton)	75	1948
COASTAL DISTRICT		
ARANSAS COUNTY—		
Atlantic, Porterfield A-4 (McCampbell)	*	7332
Porterfield B-11 (McCampbell) (perf 7104-08)	275	7236
Graham, Dunn 3 (McCampbell)	750	7140
BROOKS COUNTY—		
Standard of Texas, Garcia 5 (Alta Mesa)	200	2550
HIDALGO COUNTY—		
Atlantic, American Rio Grande 1 (Weslaco) (perf 8634-42)	¶¾ & 75	9180
JIM WELLS COUNTY—		
Howell, Talbott 1 (sw Alice) (perf 3600-07)	¶2	5530
Miss-Tex., Premont 1 (Premont)	75	2370
Smith & Story, Premont 1 (Premont)	50	2353
KARNES COUNTY—		
Luling, Boyce 22 (S. Burnell)	¶2 & 15	3664
Boyce 23 (S. Burnell)	*	3683
LIVE OAK COUNTY—		
Glasscock, Bonham 5 (Ezzell)	149	1482
H. and H., Nichols 1-A, Henry sur.	*	1050
Hannah, Wedding 1, Haughy sur.	*	2619
Holland, Alamo 2, blk 15	*	1665
Powell, House 1, blk 45	25	1480
NUECES COUNTY—		
Barnsdall, Morgan-Clarke 8 (Saxet)	750	6718
Houston, Fee 1-A (Saxet)	90	6917
Morgan 35 (Saxet)	80	4861
Humble & Barnsdall, Duncan 1 (Flour Bluff)	*	6666
Ritter 4-A (Flour Bluff)	*	6701
REFUGIO COUNTY—		
Nordan, O'Connor 5-B (Greta-Tomoconnor)	*	4405
Quintana, O'Connor A-62 (Refugio)	1500	5920
SAN PATRICIO COUNTY—		
Cain, Guy 1, sec 70	*	6500
Humble, Godwin 4 (Taft)	450	4922
VICTORIA COUNTY—		
Barnsdall, McFaddin 4 (McFaddin)	700	4395

*Failures; †Junked; ¶Million cu. ft. gas.

Production tests made in new Rio Grande discoveries

Mission.—Production tests have been made in two recently discovered Rio Grande Valley fields. Transwestern Oil Corporation's T. B. Slick School 1, Section 266, 16 miles north of Samfordyce in Starr County, flowed 5,000,000 cubic feet of gas and sprayed about one barrel of 59 gravity distillate through ¼-inch choke under equalized pressures of 1700 pounds. The test is producing from a Vicksburg sand at 4172-4259 feet, the zone having been topped at 3951 feet. Production is through perforations at 4212-30 feet, where 18 shots were made. This well had been drilled to 6862 feet, stuck drill pipe, and was plugged back for completion. Its successful completion opens the Rincon pool.

Atlantic Refining Company's Weslaco field discovery well in Hidalgo County is a distillate producer through perforations at 8634-42 feet. The American Rio Grande Land and Irrigation Company 1, in Section 175, flowed 74.59 barrels of 51.5 gravity distillate in 24 hours through ⅜-inch choke showing a gas/oil ratio of 93,000 cubic feet per barrel. Shut-in tubing pressure was 2900 pounds and casing pressure 3100 pounds. The test originally had been drilled to 9180 feet, but was plugged back.

J. L. Collins & Company's Guerra 1, La Reforma prospect in Starr County, was testing a sand section topped 6129 feet which carried oil and gas shows.

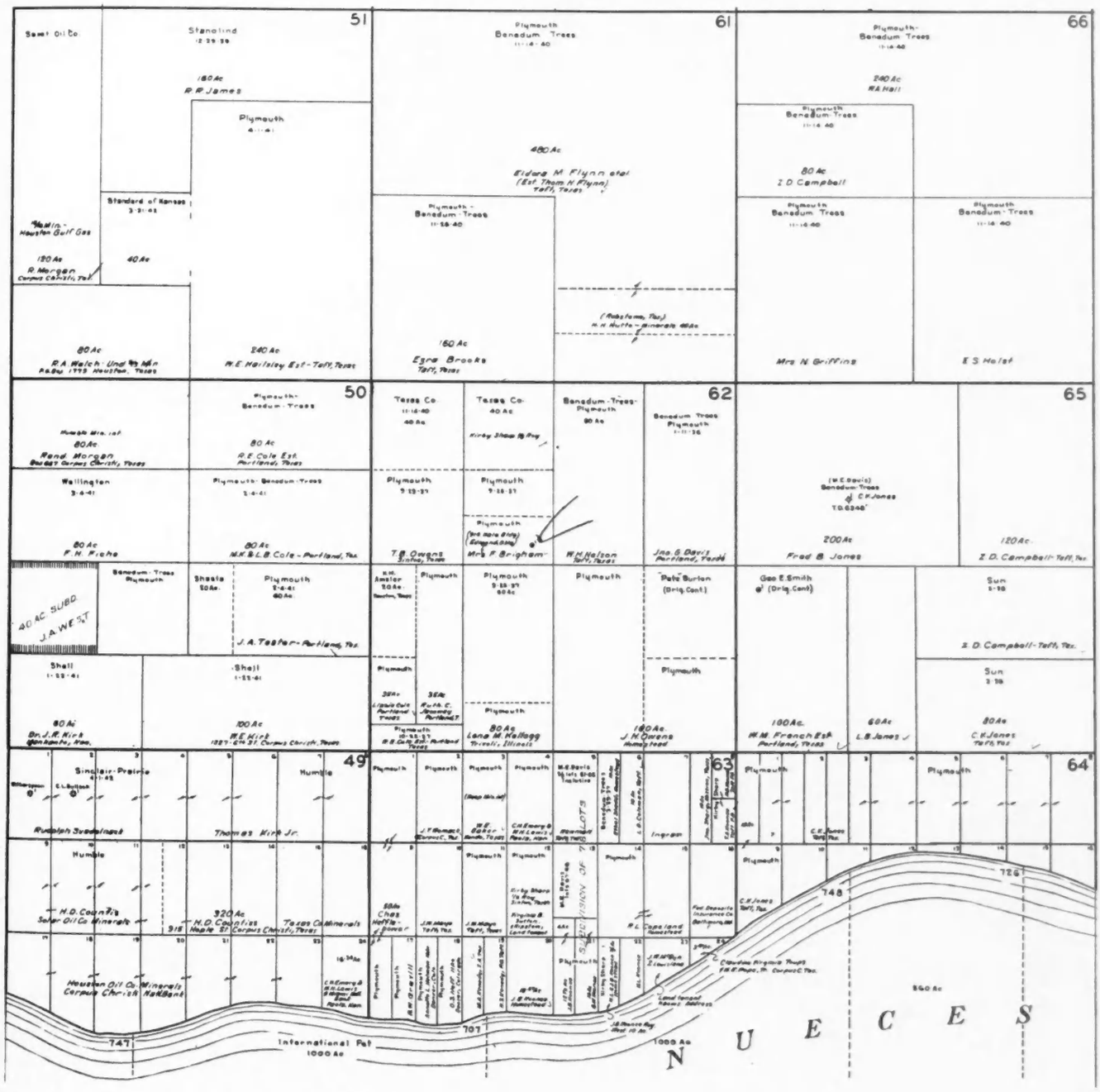
Magnolia Petroleum Company's Armendiaz 1, Willacy County deep test, will be carried into the Vicksburg, or at least to 11,000 feet. It is now drilling below 9650 feet.

Plymouth Oil Company's Brigham 1, discovery well of the New East White Point field, San Patricio County, bids well to commence an aggressive development campaign in this new Frio sand area. The structure mapped by geophysics indicates that it will be a major producing area. (Zingery Map Company, Corpus Christi, map.)

Teas and Maryland may test Chittim anticline wildcat

San Antonio.—Paul C. Teas and Maryland Corporation's S. E. McKnight 1 retained prime interest with San Antonio district's scouts as rumors of an early production test circulated. This Dimmitt County operation is in Section 23, northwest of Carrizo Springs and on the southeast end of the Chittim anticline.

McKnight 1, from an elevation of 685 feet, derrick floor, topped the Edwards limestone at 7070 feet and stopped at 7116 feet. Top of Edwards limestone was carried by some as 6655 feet, but this likely was another section of limestone in the Georgetown group. Oil stains were reported in that sector and it is possible that a production



test may be made of considerable open hole.

To the northwest, Wellington Oil Company of Delaware has two Glenrose tests on the Chittim ranch. While closed to information, reports are current that showings were encountered in Chittim 1-A, Section 156, about 3¼ miles southeast of Chittim field. The test is around 2701 feet deep, probably in the first limes. Chittim 1, just east of Chittim field, is below 4235 feet and drilling to the Glen Rose.

Several minor Austin chalk extensions to the shallow Branyon district of Caldwell County were being effected as the week closed.

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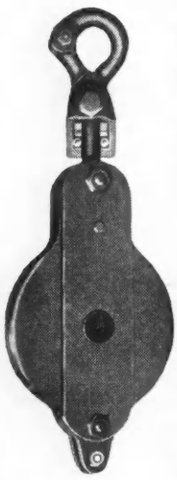

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TEXAS GULF COAST

Locations at all-time high; drilling near peak.

* * *

Amerada well adds 3000 feet to Fairbanks limit.

* * *

South Bay City assuming dimensions of larger field.

Houston.—Drilling activity in the Texas Gulf Coast is steadily reaching an all-time peak, notwithstanding a slump during the latter part of 1937 and the first part of 1938. There is an all-time high today also in the number of total operations in the sector. Completions are on the upward swing and it is believed that by the end of March that the number of wells completed each week in the district will go above the 35 mark. If so, and it appears that it will, then the Texas Gulf Coast will witness another banner year in drilling.

Fairbanks Expanded

Fairbanks, Harris County, was extended 3000 feet southwest last week when Amerada Petroleum Corporation and Stanolind Oil & Gas Company completed the second producer in the area. Peters 1, W. K. Hamblin Survey, came in making 2,500,000 cubic feet of gas daily and 22 barrels of 59 gravity distillate through a 12/64-inch choke. Tubing pressure was 1900 pounds; casing pressure, 2100 pounds.

Peters 1 was drilled to 6894 feet in salt water sand. Seven-inch casing was perforated from 6823 to 6826 feet with 12 shots.

North of Crosby, Harris County, Humble Oil & Refining Company abandoned Rohlf 1, J. Sellers Survey at 8116 feet, due to stuck drill pipe.

A mile northwest of production at Friendswood, Harris County, H. C. Cockburn's Fee 1, W. K. Smith Survey, was drilling below 5670 feet in shale last week and, according to reports, the well is around 200 feet lower on upper markers than West Production Company's Woodburn 1, dry hole. The well will core deeper in Frio formation.

After completion of Jones & Grey 1, Friendswood, for 25 barrels of pipe line oil per hour at 6042 feet, Humble Oil & Refining Company was making preparations to bring in four more wells next week. Beamer 5 was waiting on cement at 6082 feet; Keisling & Dixon 5, was drilling cement plugs at 6048 feet; Roberts 1, running tubing at 6041 feet, and J. J. Settegast 2, was waiting on cement to set at 6050 feet.

Red Bank Oil Company is rigging up on an outpost location at Hitchcock, Galveston County. Maco Stewart 1, J. D. Moore Survey, is approximately one mile northwest of production.

Northeast of Hitchcock, and at Dickinson, Galveston County, four oil wells were completed last week. Atlantic Refining Company's Deats 1, W. K. Wilson Survey, was completed in the deep sand and made 775 barrels of 36.2 gravity oil daily through a ¼-inch choke, with a tubing pressure of 1210 pounds and a casing pressure of 1280 pounds. Deats 1 was perforated with 20 shots from 9033 to 9037 feet. Sand showing oil was logged from 8898 to 9046 feet. Seven-inch casing was set one foot off bottom at 9080 feet. In the southwestern portion of Dickinson (Gillock), Coast Petroleum Corporation's Maco Stewart 8, W. K. Wilson Survey made 35 barrels per hour through a ¼-inch choke from 8912 feet. Northwest of Humble Oil & Refining Company's Maco Stewart A-18, the operator's Kreisle 1, W. K. Wilson Survey, made 12 barrels per hour through a ¼-inch choke after perforating from 8698 to 8704 feet. On the north flank of Dickinson, Pure Oil Company's J. W. Shelor 4-B, W. G. Banks Survey, was completed at 8006 feet flowing 470 barrels daily.

Six Rigs Operating at Orange

Orange, Orange County, is expected to become one of the most active fields in the Gulf Coast. Shell Petroleum Corporation announced location for Loeffler 1, south offset to Gulf Oil Corporation's Granger 1, Wm. Dyson Survey. Gulf Oil Corporation has also announced a new location; it already has two rigs working; Ryan & Thompson, one; United Production Company, one, and J. M. Campell, one. With Shell Petroleum Corporation's new rig coming into the area, there will be six operations.

On the Southwest flank of Orange, Gulf Oil Corporation was completing two wells at the end of the week. C. Granger 1, south offset to the discovery well for the deep sand, was flowing into burning pits from 5927 feet. The hole was drilled to 5927 feet in sand showing oil. Top of the sand was logged at 5918 feet. Seven-inch casing was set at 5907 feet. F. Granger 1, Wm. Dyson Survey was being washed in at 5951 feet. Sand showing oil was logged from 5937 to 5951 feet and seven-inch casing was set at 5934 feet. On a five minute drill-stem test this well showed a 75-pound pressure and 1100 feet of pipe line oil. When the above two wells

are completed it will make three for Gulf Oil Corporation and one for Tillery & Ryan, the discoverers, at Orange.

Ryan & Thompson's Norwood 1, 2500 feet northwest of the deep discovery at Orange, Wm. Dyson Survey, was shut down waiting orders at 6479 feet. Salt water sand was logged in Frio formation. The well is about 100 feet low on structure, compared to the discovery well.

Northeast of production at Seabreeze, Chambers County, Sun Oil Company was running an electrical logging device in Seabreeze Land Company 1, H. T. & B. No. 102. The hole is bottomed at 8890 feet in salt water sands. Gas sand was logged from 8715 to 8740 feet.

North Cheek area, Jefferson County, received a set back last week when Magnolia Petroleum Corporation's Phelan 3-A, cored salt water in Frio sands from 8672 to 8679 feet and is shut down.

One mile northeast of production at Nome, Jefferson County, Sun Oil Company abandoned Morris 1, B. B. B. & C. Survey, No. 398 at 6206 feet after running an electrical logging device. No sands were cored.

TEXAS GULF COAST
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ANAHUAC—		
Gulf, Wilcox 9	600	7120
Humble, Clark 20	*	7170
Drought C-1	¶3½	7005
BARBERS HILL—		
Stanolind, C. C. A. A. 15 (wo)	*	4063
Texas Gulf, Winfree 6 (wo)	*	5190
DAMON MOUND—		
H. & N. Oil Co., Wisdom 17	*	450
DANBURY—		
Rowen & Shell, Jamison 4	22	1987
ESPERSON—		
General Crude, Esperson 38	*	3089
FAIRBANKS—		
Amerada-Stanolind, Peters 1	¶2½	6826
FRIENDSWOOD—		
Humble, Jones & Grey 1	600	6042
DICKINSON—		
Atlantic, Deats 1	775	9081
Coast Pet. Corp., M. Stewart 8	840	8912
Humble, Kreisle 1	288	8752
Pure, Shelor 4-B	470	8006
HARDIN—		
Gulf, Cessna 1	500	7583
HASTINGS—		
Humble, McDeed 7	624	6080
J. Simmons, Alexander 3	500	6086
Stanolind, Turner 19	450	6080
Winsor Oil Co., Blumer 1	628	6100
HULL—		
Guinn Oil Co., Marshall 7	16	1134
LIVINGSTON—		
Humble, Grandbury 12	144	4171
LOCHRIDGE—		
Shell, Ramsey 6-A (wo)	67	6364
Ramsey B-4 (wo)	276	6369
MANVEL—		
Texas Co., Houston Oil Field Association 28	570	5680
NOME—		
Sun, Morris 1	*	6206
SATSUMA—		
Amerada-Stanolind, Dopslauf 3	10	6839
TOMBALL—		
Humble, Winslow 1	510	5573
WEST BEAUMONT—		
Sun, Gailey 1 (wo)	334	5878
WEST COLUMBIA—		
Texas Co., Robinson 1	552	5393
WITHERS—		
Texas Co., Thompson 6	120	5548
HARRIS COUNTY—		
Humble, Rohlf 1, n of Crosby, J. Sellers sur	*	8116
JEFFERSON COUNTY—		
Glenn H. McCarthy, Broussard Trust 1, Cheek area, C. Hillibrandt sur	105	7725
MATAGORDA COUNTY—		
Pierce Estate, Fee 1, n of Van Vleck, I&GN No. 7	264	6626
TRINITY COUNTY—		
Gossage & Thompson, Thompson 1, n of Trinity, J. Hickey sur	*	3017

*Failures; †Junked; ¶Million cu. ft. gas.

South Bay City Looks Good

South Bay City, Matagorda County, is taking on the appearance of another Old Ocean field. Hamman Exploration Company's Crooker 1, workover, is reported to have cored from 130 to 150 feet of broken formation showing oil and gas down to 10,200 feet. The operators are running an electrical logging device. Very little information about the well is available, but according to reliable reports, it will open up a new producing sand. Crooker 2, completed at 9500 feet, then plugged back and completed at 8200 feet. Then it was reworked and drilled to 10,200 feet. It is the deepest in the field. No salt water sands have been reported.

Pan America Production Company's Richers 1, I. & G. N. No. 3 coring in sand and shale below 9185 feet last week, has cored a number of broken formations showing oil and gas.

Pierce Estate's Fee 1, discovery well, north of Van Vleck, I. & G. N. No. 7, Matagorda County, was making 80 barrels of fluid daily last week, part time through a ⅛-inch choke and part time through a 10/64-inch. On shake out tests the well showed from zero to 10 percent basic sediment and water. Tubing pressure was 700 pounds. Fee 1 came in flowing 11 barrels of 33 gravity oil per hour through a 3/16-inch choke at 6619 feet.

Recess Fairbanks hearing

The Texas Railroad Commission last week recessed until March 28, its hearing on the new Fairbanks field, Harris County. This recess was ordered after operators from the area asserted that they believed more wells must be drilled before proper recommendations could be made upon which to base regulations for operations in the field.

The commission refused to recess, however, until the Amerada Petroleum Company, at whose instance the meeting was called, had placed in the record such data as was available. Some 50 land and royalty owners had come to Austin to attend the hearing; for that reason postponement was refused, and the recess was taken after this data was in the record.

The most important point developed in this testimony was the fact that the Peters 1, drilled by Amerada between the Satsuma and the well at Fairbanks, failed to find the Mills sand from which the Fairbanks well is producing. Amerada officials indicated that the Peters well would probably produce from the Satsuma horizon. From this testimony it appeared possible that the Satsuma field might extend northeast to the Fairbanks field, but since there was no indication of the limits of the latter, the operators asked for a delay to offer proper rules.

The Amerada had planned to ask for 20-acre spacing, and several independents and land owners who were present had come to protest this program.

Four wildcats have indications of possible production.

★ ★ ★

Jeanerette test is failure after going to 11,635 feet.

Lake Charles. — Interest in South Louisiana during the past week centered around four wildcats which are approaching critical depths and have cored sands with traces of oil.

In the Lake Mongouloi area, St. Martin Parish, The Texas Company's State 4, Section 14-10s-9e, was preparing to drill deeper at 7723 feet after making a drill-stem test. Last week sand showing oil was logged in Miocene formation from 7713 to 7723 feet. A 15-minute drill-stem test through ¼-inch chokes showed salt water. Another test from 7631 to 7646 feet showed 180 feet of 34.6 gravity oil and 1626 feet of salt water. The last test was made in 30 minutes through ¼-inch chokes. State 4 is the fourth wildcat drilled in this area. The third test put down by the company established Lake Mongouloi as a salt dome when salt water was logged at 8175 feet. Every well drilled in the district has encountered showings of oil but none has been commercially productive.

Another wildcat on the flank of a salt dome in St. Martin Parish cored sand with shows of oil and gas. Carter, Stewart et al's J. J. Martin 2, Section 28 area, Section 32-9s-7e, was coring in hard sandy shale at 4360 feet showing oil and gas. The well will core a few feet deeper and probably test.

Another St. Martin Parish wildcat which is attracting attention is Shell Petroleum Corporation and Tide Water Associated Oil Company's Unit 1, West Lake Verrett prospect, Section 11-14s-12e. The wildcat is down to 8850 feet in sand with no shows. Last week a drill-stem test was made of sand showing oil from 8284 to 8295 feet. It showed five stands of mud, 17 stands and 1 double of salt water with a fair blow of gas in 8 minutes through ¼- and ⅜-inch chokes. It is reported to be running high on structure.

Oil Odor at Fausse Point

The Texas Company's State Fausse Point 4, Lake Fausse Point prospect,

Section 35-11s-8e, Iberia Parish, is coring in hard sand with an odor of oil. Top of the odor was logged at 8048 feet. Hard sands showing oil have been encountered since 7912 feet. It is believed it will be cored deeper then set pipe for a production test.

Humble Oil & Refining Company is preparing to make another test of a new sand at North Crowley, Acadia Parish. Casing was perforated with 12 shots from 7728 to 7735 feet and cement retainer set at 7785 feet in Federal Land Bank 2, Section 34-8s-1e. Last week a core had broken formation showing oil and gas from 7674 to 7970 feet. Seven-inch casing was set at 7984 feet and perforated with 12 holes from 7742 to 7750 feet, but failed to show anything of commercial value from these perforations and they were squeezed with cement. Cement was drilled to 7803 feet and perforations were made at the end of the week at 7735 feet. The regular producing horizon for North Crowley is around 8100 feet.

Humble Oil & Refining Company has announced location for Lee Smith 1 at North Crowley. It is 1650 feet southeast from the northwest line and 450 feet northeast from the southwest line of Section 44-8s-1e. The company has two rigs active in the field and has locations for two additional wells.

The Texas Company is preparing to retest a new sand at Lafitte, Jefferson Parish. Louisiana Land & Exploration Company's Lafitte 4 is being worked over at 8200 feet. Originally the well was drilled to 10,092 feet. It was completed at this depth and after it started making salt water it was plugged back and tested around 9400 feet. It was then plugged back to 8200 feet where 5¾-inch casing was set. The well made a large amount of gas in this new sand. Last week the well was killed and the setting was pulled and the 5¾-inch casing was recemented at top. At the end of the week it was waiting on cement to set.

Lafitte Completion

On the northeast side of Lafitte, The Texas Company completed Marrero 1, Section 21-17s-24e. It made 1780 barrels of 37.8 gravity pipe line oil daily through a ⅜-inch choke with a tubing pressure of 1525 pounds. Marrero 1 was drilled to 10,275 feet and 7-inch casing was set at 9731 feet. Casing was perforated with 400 holes from 9530 to 9605 feet.

SOUTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ENGLISH BAYOU—		
Fohs, Castle 7 (wo)	528	7028
Union Sulphur, Kaufman 6	*	9021
JEANERETTE—		
Herton Oil Co., Roanes Sugar Co. 1	*	11,634
JENNINGS—		
Shell, Community 3 (wo)	20	7030
LAFITTE—		
Texas Co., Marrero 1, dr 10,260 ft, perf 9532-9606 ft	1783	9606
LIRETTE—		
Humble, Wurzlow 1	*	11,347
ROANOKE—		
Humble, DeVilbiss B-10	336	8838
VINTON—		
J. V. Redick, Vincent 1	75	2498
JEFFERSON DAVIS PARISH—		
Union Sulphur, Calcasieu National Bank 1, Woodlawn area, 12-9s-8w	43	8388

*Failures; †Junked; ¶Million cu. ft. gas.

North of Marrero 1, The Texas Company's Marrero 2, Section 21-17s-24e, Lafitte field, Jefferson Parish, was drilling in hard shale at 9750 feet. Sand showing oil has been logged from 9530 to 9550 feet and from 9640 to 9660 feet. The hole will be carried below 10,000 feet and the above two shows tested.

The first deep failure for Lirette, Terrebonne Parish, is Humble Oil & Refining Company's F. Wurzlow 1, Section 6-19s-19e. The hole was drilled to 11,347 feet. An oil odor and oil show was logged from 8208 to 8215 feet, 8215 to 8225 feet and from 9768 to 9776 feet. The company will move equipment to C. Wurzlow 1, Section 32-19s-19e. Union Producing Company is rigging up on Fee 1, Section 50-19s-19e.

Two drill-stem tests on Gulf Oil Corporation's Lafourche Basin Levee District 7, Lake Hermitage, Section 12-18s-25e, Plaquemines Parish, showed salt water last week. The operators are trying to open a new producing sand for the field. Last week casing was perforated from 9170 to 9185 feet and a drill-stem test showed gas, gas-cut mud and salt water. The casing was then perforated from 9106 to 9112 feet with 12 holes. This drill-stem test showed 480 feet of gas-cut mud and 180 feet of salt water. A cement retainer was set at 9093 feet and perforations were squeezed. Another test will be made the coming week.

Amerada Petroleum Corporation and Louisiana Land & Exploration Company's St. Charles Land Company 1, southwest of production at Bayou Des Allemands, Section 13-15s-20e, St. Charles Parish, has shown only salt water and mud on tests from 5407 feet down the hole to 6928 feet. Last week casing was perforated in new sands at 5424 to 5428 feet (10 shots) and from 5407 to 5410 feet (10 shots). At the end of the week the well was shut down waiting on cement to set.

Jeanerette Deep Failure

Herton Oil Company's Roanes Sugar Company 1, deep test at Jeanerette, Section 58-13s-8e, St. Mary Parish, proved disappointing last week. The hole was drilled to 11,635 feet in shale, being the deepest hole drilled in the field. After setting 7-inch casing at 9884 feet no showings of importance were cored below that depth. Carter 2, Section 38-13s-9e, was down to 10,032 feet in shale.

In the Opleaousas area, St. Landry Parish, Noxon & Toombs announced location for E. M. Boagni 1, 2280 feet south and 660 feet west of the northwest corner of Section 65 and in Section 41-6s-4e.

Union Sulphur Company finally completed Calcasieu National Bank 1, Woodlawn area, Section 12-9s-8w, Jefferson Davis Parish. The well is making 43 barrels of 51 gravity distillate through 12/64-inch bottom hole choke and a 33/64-inch top choke. It was completed from perforations at 8288 feet. The company is drilling in shale at 3010 feet in Calcasieu National Bank 2, Section 12-9s-8w.

Sun Oil Company will try to establish production at Northwest Stark prospect, Calcasieu Parish, where D & D Oil Company drilled a couple of dry holes. The company's Lutcher Moore 1 is 2081 feet north and 1661 feet east of SWc NW Section 1-8s-13w.

Schuler trend cores Permian sand marker.

* * *

Another horizon shows in West Zwolle area.

Shreveport.—W. J. Furlong, Jr., and associates' E. M. Clark 1, NW SE NE 10-20n-7e, on the southeast end of the 220-mile Schuler trend development, was coring hard white quartz sand at 6307 feet last week, in what some determinations indicated was the Permian horizon, and what others deemed to be the lower Marine. Some determinations placed top of the Permian at 6218 feet; elevation is 103 feet.

Those holding to the theory the hole is still in the lower Marine claimed the present formation of hard white quartz sand is similar to lower Marine oil-producing sand at Schuler, Arkansas, which immediately overlies the Permian. In a core from 6272 to 6284 feet of this formation only 2 inches of porosity was logged.

Regardless of whether the test is in the lower Marine or top of Permian, it is structurally the highest deep test ever drilled in North Louisiana, and will give valuable information on deeper strata northeast of the Monroe gas field in an area hitherto unexplored in deeper horizons. Should it prove productive in the lower strata it would give encouragement to deep exploration of the Monroe Uplift, as present location is believed to be on a secondary high northeast of the Monroe Uplift.

Possibility of another oil producing horizon in the West Zwolle (Blue Lake) district, Sabine Parish, was given last week by J. G. Sutton Oil Company's Sabine Lumber Company 1, SE NW NE 23-7n-14w, which was arranging to run formation tester after showing of oil in three 6-foot cores from 3562-80 feet in the Tokio. This test bailed dry in the chalk at 2450 feet where an oil showing was had. The West Zwolle field had only 5 producers in the shallow chalk. Present test is designed as a 10,000-foot operation. The shallow wells were abandoned several years ago.

Fohs Oil Company was moving in

NORTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CLAIBORNE PARISH (Lisbon)—		
A. O. Olson, Patton A-7, 30-21n-4w	1500	5190
Sloan & Zook, Patton 2, 1-20n-5w	264	5355
DE SOTO PARISH (Bull Bayou)—		
Petroleum H. & P. Co., Jal Drlg. Co. 1, 7-11n-11w	180	2792
LINCOLN PARISH (Lisbon)—		
Magnolia, Pollock 1, 6-20n-4w	912	5327
WEBSTER PARISH (Cotton Valley)—		
North American Cons. Oil Co., Stewart 1, 32-21n-10w	75	5906
Ohio, Bodcaw 4, Acct. 2, 24-21n-10w	409	8222
Magnolia, Mixon 2, 22-21n-10w	600	8325

*Failures; †Junked; ¶Million cu. ft. gas.

materials last week for a proposed 6000-foot test on the southeast nose of the shallow Cartersville field, the new operation being Thomas 1, SE SE 10-22n-11w, Webster Parish. Only recently Magnolia Petroleum Company acquired a 760-acre lease in Section 8 and 17-23n-11w, north of Cartersville on which an 8500-foot test must be started by next July.

J. D. Houseman of Shreveport has assembled 3000 acres around Section 12-21n-11e, East Carroll Parish. Hunter & Rowe of Dallas, Texas, have acquired 1500 acres and a half interest from W. J. Furlong, Jr., in his E. M. Clark 1, Section 10-20n-7e, Morehouse Parish.

E. T. Oakes, H. D. Easton and associates' were trying to get to bottom to resume swabbing Griggs 1, C SW 36-18n-1w, Lincoln Parish wildcat, after shooting the well a second time with nitro-glycerin at 5932-41 feet where good porosity and resistivity were encountered. The hole bridged 800 feet from bottom after the second shooting.

Possible extension of the northeast part of the Louisiana side of Rodessa three fourths of a mile north was indicated last week as Freeman W. Burford's H. Clay Brown 1, C N½ NE SE 5-23n-15w, perforated casing in the Gloyd horizon and began to swab. Total depth is 6124 feet. This test logged 31 feet of saturation in the Gloyd and casing was perforated from 6044 to 6071 feet and from 6084 to 6100 feet, with 57 and 66 shots, respectively. Electrical logging device was run before casing was cemented.

Four miles northwest of Cass County, Texas, production, Vaughn Production Company's Ryley 1, James Taylor Survey, was drilling below 5495 feet. It is seeking production from a supposed lateral fault paralleling the main Rodessa fault.

New casing program for Rodessa, Texas

A new casing program for wells in the Rodessa field was provided by the Texas Railroad Commission in an order prepared last week.

The rules provide for 1000 feet of surface casing cemented to the surface, and an oil string set at a depth sufficient to cut off all gas formations above the oil saturated horizon.

It was estimated that the surface casing provided would give a casing seat some 400 feet in the Midway and that this would furnish ample protection against blow-outs.

The new plan will be substituted for the three-string casing program which has been in effect in the Rodessa field up to this time.

Shreveport.—Forty-one drilling permits were authorized last week by the minerals division, Louisiana Conservation Commission of which 18 were for North Louisiana divided among the following parishes: Bossier, 1; Caddo, 4 (none for Rodessa); Claiborne, 4, all in Lisbon; DeSoto, 5; Lincoln, 1 (Lisbon); Sabine, 2; and Webster, 1. The 23 in South Louisiana were divided among the following parishes: Acadia, 3; Calcasieu, 1; Evangeline, 3; Cameron, 1; Jeff Davis, 2; Jefferson, 1; LaFourche, 1; Plaquemines, 2; St. Mary, 1; Terrebonne, 3; Vermilion, 4; and St. Landry, 1.

ARKANSAS FIELDS

Test between Buckner and Schuler has salt water.

El Dorado, Ark.—Kerr-Lynn Oil Company's Barnett 1, SE SW NE 14-17-20, Columbia County wildcat midway between the Buckner and Schuler fields, both productive from Permian lime, showed salt water last week after plugs were drilled in 7-inch casing cemented where it hung at 7051 feet. Total depth was 7664 feet and 6 feet of saturated lime had been logged just above that depth; elevation is 321 feet. The salt water appeared when formation tester was run. Despite this setback, it was cored to 7730 feet where more saturation was reported and preparations were made to run casing to bottom and perforate first at the 7658-64-foot level where the first saturation was logged.

Meanwhile, three fourths of a mile southwest of the Buckner field discovery well, Lyons & Neely's Taubel 1, (Tatum fee) C SE NW 18-16-22, La-Fayette County, was coring at 7202 feet for the Permian lime saturation; elevation is 252 feet. This test logged top of lower Travis Peak at 5307 feet, and has been checking favorably with the discovery well, which is producing from 7258 feet.

In the same area, Standard Oil Company of Louisiana's Bodcaw Lumber Company 1, C SE NE 18-16-22, was drilling below 6015 feet and Crone 1 (formerly Thomas 1), C NW SE 8-16-22, was drilling below 5155 feet.

Easton, May and Murdock's LaGrone 1, NE NE 5-12-26, which will seek the truncated edges of the Permian lime, plugged back to 1000 feet from 2944 feet to straighten crooked hole before deepening to 4500 feet.

Another test was started in the southeast trend from Schuler last week when E. G. Bradham started rigging S. L. Robbins 1, SW NE 12-19-16, Union County. Arkansas-Louisiana Gas Company made location for a test in the Johnson County gas field, where no drilling has been done for some time, the new test being W. C. Hudson 2, SE NW 14-10-24.

El Dorado, Ark.—Only one drilling permit was issued last week by the Arkansas Board of Conservation, this being E. G. Bradham's S. L. Robbins 1, 700 feet west of east line and 330 feet north of south line SW NE 12-19-16, Union County.

ARKANSAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
LONOKE COUNTY—		
Frank Silver, Chambers Est. 2, 17-2n-7w	*	1500
MILLER COUNTY (Rodessa) —		
Mrs. S. O. Thompson, Greer 1, 10-20-28	157	6122

*Failures; †Junked; ¶Million cu. ft. gas.

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New Iberia—Rodessa—Monroe
Cotton Valley—Greggton
Houston

EASTERN FIELDS

Fourth flowing oil well in new Pennsylvania area.

Pittsburgh.—In the vicinity of Niagara Oil Corporation's sensational Bradford area strike of last fall, Minard Run Oil Company last week drilled in the fourth flowing well to tap the Sliverville producing formation with an estimated initial production of about 40 barrels an hour. It topped the sand at 1309 feet and stopped drilling 3 feet in. As yet none of the wells completed in this area have drilled through the sand.

Production is from a stray formation, named after the Sliverville lease on which Niagara Oil Corporation drilled the discovery August 24. This well caused widespread interest throughout the Eastern fields area as it was the first gusher to be drilled in the Pennsylvania grade crude region in 15 years. Minard Run Oil Company drilled the second flowing well on October 26, which was followed by another Niagara completion on December 13. The latest producer is about 900 feet southwest of the two Niagara wells and 500 feet southwest of the Minard company's first well, indicating the pay streak follows a southwest-northeast trend as do other formations in the area.

Late in January, Becker & Williams drilled a gasser approximately 4500 feet southwest of the crude producers which is good for 6,000,000 cubic feet a day. It has been turned into the lines of Manufacturers Gas Company. At the time it was drilled, it was feared that it would seriously affect the producing wells, but as yet the oil wells have given no indication of dropping off. Since the Niagara company's discovery, 16 other wells have been drilled in search for Sliverville sand production. Twelve of them, however, have missed the sand entirely or recorded only a show.

Midwest Development Company's wildcat south of Yellow Springs, Greene County, Ohio, after being drilled to 1900 feet, was shot last week at the 1474 foot level and was awaiting pumping equipment preparatory to making a production test. More than 16,000 acres are under lease in this county. Ohio completions of the past week numbered 15, of which 2 were oil wells having an average initial production of 31 barrels daily, 11 were gas wells and 2 were dry holes.

Michel Brothers & Douglas spudded Lee Cronbach 1, Point Township, Posey County, Indiana, last week on a location about 66 feet east of the Cronbach school. It is the first test to be undertaken west of Mt. Vernon in the current drilling campaign. Jack Cox, Owensboro, Kentucky, is the drilling contractor. No completions were recorded in Indiana last week, but several tests are reaching formations from which production is expected and should complete within the next two or three weeks.

Johnson County, Kentucky, which has seen relatively little development activity during the past vear, will come to the fore this season, it was indicated last week. Drilling of several wells to provide gas for re-pressuring old oil wells has indicated the old Johnson County field has favorable prospects in deeper sands. A block of leases have been acquired by Wheeler Oil Company of Ashland and a test is going down on Gullet branch, while Griffith & Conley are drilling on Little Paint Creek. Fred L. Hartman has completed organization of Affiliated Oil Properties, Inc., and the new company will launch immediately extensive drilling operations on 5000 acres recently acquired.

Sixteen tests were completed in Kentucky last week, largest of which was the 60-barrel Stephens et al's Caldwell & Layne 1 in Floyd County, bottomed at 1542 feet. Five other producers brought the average daily initial of the 6 oil wells to 24 barrels. Eight of the completions were gas wells and 2 were failures.

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EASTERN STATES
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
OHIO		
ASHLAND COUNTY—		
Ohio FG Co., Fritz 2	¶.20	2920
ATHENS COUNTY—		
Ohio FG Co., Caldwell 3	¶.32	899
Ross et al, Wingett	¶.05	1595
KNOX COUNTY—		
C. O. Moore, Speelman 1	¶.04	2140
LICKING COUNTY—		
Stricker & Armbuster, Priest 2	*	650
MEIGS COUNTY—		
Smith et al, Athens Pomeroy C. & L. Co.	¶.18	1000
MONROE COUNTY—		
Kreamor et al, Haren	¶.40	1620
MORGAN COUNTY—		
A. T. Pettit & Co., Vanhorn 1	*	2275
MUSKINGUM COUNTY—		
Gas Producnig Co., Sidle 1	55	3150
RICHLAND COUNTY—		
Harmon George, Schnan 1	¶	2485
SANDUSKY COUNTY—		
Trent Oil Co., Havens 1	¶.07	1350
STAR COUNTY—		
Lyons et al, Dickes	¶1.77	4670
VINTON COUNTY—		
Kelch Bros., Webb 1	¶.04	707
WASHINGTON COUNTY—		
C. D. Uhl & Co., Huffman 5	8	810
WAYNE COUNTY—		
Ohio FG Co., Blachley	¶.46	3152
WEST VIRGINIA		
CABEL COUNTY—		
Swann Gas Co., Mills 1	¶.45	3338
CALHOUN COUNTY—		
Garrett et al, Wilson & Fogel 1	¶1.50	1887
GILMER COUNTY—		
Scott et al, Sands et al 1	¶5.10	1960
KANAWHA COUNTY—		
Pure, Williams Coal Co. 282	5	3300
United FG Co., Dawson 4765	¶23.26	5080
McCormick 4770	¶3.50	4745
Warner & Engle, Litton 1	¶20.00	4828
Spartan Gas Co., Fisher 1	¶16.08	4851
Owens-Illinois Glass Co., Meyers et al 12	¶.50	5330
MARSHALL COUNTY—		
Guy B. & A. C. Patterson, Fowler 1	*	3140
RITCHIE COUNTY—		
F. R. Ball, Jobes 1	*	1967
WAYNE COUNTY—		
Mountaineer Gas Co., S'gman & Adkins 1	¶.24	3337
KENTUCKY		
FLOYD COUNTY—		
Stephens et al, Caldwell & Layne 1	60	1542
United Carbon Co., Williamson 4	8	2610
Fred Williams, Woods 1	¶2.00	1510
Honaker 3	¶.40	....
Allen et al, Collins 1	¶.20	....
KNOTT COUNTY—		
Southeast Gas Co., Combs & Allen 2	¶.70	2795
Hamilton, Miller 14-E	¶.24	2860
LAWRENCE COUNTY—		
Rockcastle Gas Co., Ball 1	¶.60	2490
McLEAN COUNTY—		
Snyder et al, Shockley 1	30	1117
MARTIN COUNTY—		
Virginian O&G Co., B-1259 2	30	1506
Kentucky-W. Va. Gas Co., Preece 5235	*	1414
OHIO COUNTY—		
Snowden & McSweeney, Peckinpaugh 22	10	....
Damron et al, Rowan 4	¶.05	1190
Scholl et al, Farmer 3	¶	....
POWELL COUNTY—		
South Penn Oil Co., Adams 7	6	....
Mrs. Agatha Wireman, Townsend 24	*	....
PENNSYLVANIA		
ALLEGHENY COUNTY—		
Koenig et al, M. Koenig 2	2	2000
Alex Wally, Ward 3	¶	....
GREENE COUNTY—		
Equitable Gas Co., Thorp	¶.16	3538

*Failures; †Junked; ¶Million cu. ft. gas.

ILLINOIS DEVELOPMENTS

Noble area most active; development heads north.

* * *

Mud to continue holding up work for some weeks.

Olney, Ill.—New producing oil wells added to Illinois fields during January numbered 40, while 17 other tests were completed as dry holes, the monthly report of Dr. A. H. Bell and G. V. Cohee of the state geological survey revealed last week. The producers raised the total for new fields during the current boom to 283. Richland County was far in the lead last month with 23 new oil wells, while 7 were drilled in Clay County, 3 each in Marion and Clinton Counties, 2 in Wayne County and 1 each in Crawford and Jefferson Counties. Of the dry holes, 5 were drilled in Richland County, 4 in Marion, 2 each in Jasper, Jefferson and Wabash Counties and 1 each in Lawrence and Clinton Counties.

Pure Oil Company's wells, according to the report, recorded the largest initial daily outputs, with one in Richland County yielding 936 barrels and another with 757 barrels, and a Clay County well registering an initial of 762 barrels. Thirteen of the 23 successful Richland County completions had initials over 400 barrels daily.

Reports circulating for the last two weeks in the basin area that Hoffman et al's O. D. King 1, Section 20-8n-10e, Crooked Creek Township, Jasper County, would be reopened for further testing or drilling are denied by officials. The well was recently drilled to 4139 feet (corrected depth) and abandoned when saturation found at both shallow and deeper sands were considered not sufficiently porous to make commercial production. Formations were encountered at the following depths: Tar springs at 1995 feet with a small showing of oil; Glen Dean at 2095 feet; Ste. Genevieve lime at 2518 feet; Roseclaire at 2552 feet; McClosky at 2562 feet; Chattanooga at 3870 feet and Devonian at 4022 feet. Bottom-hole money for the deep wildcat was furnished by The Texas Company, Ohio Oil Company and Shell Petroleum Corporation.

In Fayette County to the west, Ryan & Redgraves' Jones 1, Section 24-9s-1e, Ramsey Township was abandoned as dry after reaching 1800 feet. The wildcat was two miles west of Herrick and 16 miles southeast of Pana.

The Noble area of Richland County continues to be the most active field of the state, with present development headed north of the village. Townlot drilling is virtually completed and the campaign to the north is going forward despite a sea of mud that makes movement of materials and equipment appear almost impossible. Sleds are being used in some cases and tractors are doing the major part of the heavy work. Pure Oil Company, Ohio Oil Company, Gulf Oil Corporation and Carter Oil Company are the most active in this area. The Noble field was credited with 67 producers on February 1, compared to the Clay City field's 86. Developments in the past few weeks, however, appear to have forced the Noble area to the lead among the areas producing from the McClosky. The Patoka field of Marion County on February 1 had 96 producers, but they were from the shallower Benoist sand with production considerably less than the McClosky wells of the Richland-Clay-Wayne County area.

North of Olney, Gulf Oil Corporation's G. W. Hill 1, Section 2-4n-10e, Preston Township, Richland County, was coring at 3015 feet Tuesday afternoon in search of the McClosky. The test, 4 miles north of Bur Kan Oil Company's Allen 1 which was a 300-barrel flowing well, is closely watched as an indication of future exploration and development in the area north of the city. Meanwhile, Bur Kan Oil Company was completing derrick for Allen 2 on Section 27-4n-10e, Olney Township.

South of the Allen lease and within the Olney city limits, Morrison & German were drilling G. Conour 1 below 1800 feet, making rapid progress toward the McClosky level.

Weather conditions are certain to hold up the spring drive until at least mid-April, before which time mud will hinder new operations. Present activity is confined almost entirely to the north Olney area, the Noble area and the Clay City region. There is considerable activity in the new Centralia pool, Marion County, but most of it is within the village limits where 9 wells are drilling or preparing to drill. John Pugh was first to reach the Benoist pay in the Centralia city limits with E. C. Copple 1. The Benoist was between 1356 and 1375 feet. Almost simultaneously, the first dry hole in the Centralia area was announced by Henshaw & Shisnat, whose L. N. Coe 1, a mile southwest of town, was drilled to 1400 feet.

Pure Oil Company brought in a core drill rig into the basin area last week for work on the C. B. Clay 2 in the southeast Cisne area. It may later be used on acreage throughout the area for rapid testing.

ILLINOIS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CLAY COUNTY—		
Pure, A. Travis 4	917	3000
Duncan Oil Co., Carroll 5	150	3044
CLINTON COUNTY—		
Shell, Criley 2	168	1372
Gulf, Bueller 1	137	1361
Adams O&G Co., Schmitz 2	57	1381
CRAWFORD COUNTY—		
Dinsmoor Oil Co., Cawood Hrs. 1	4	985
LAWRENCE COUNTY—		
Salvage O&G Co., Whittaker 1	*	1440
MARION COUNTY—		
Kirk D. Holland, Rogier 1	5	1442
Helmerich & Payne, Stephens 1	*	2765
RICHLAND COUNTY—		
Pure, Palmer-Taylor 7	757	3000
Coen 11	535	3000
Snyder 3	509	3000
Cammon 1	442	2980
Montgomery 2	384	3000
Coen 8	360	3000
Montgomery 3	157	3000
Coen 6	30	3000
Wilson 2	*	3000
Shafer 1	*	3000
Ohio, Arbuthnot 7	565	2973
Bur-Kan Oil Co., Allen 1	300	3045
Morrison & German, Montgomery 1	140	3000
Mammoth O&R Co., Heitz 2	*	3150
Carter, Watkins 6	*	3030
WABASH COUNTY—		
Kneipp et al, Buchanan 1	*	1501
WAYNE COUNTY—		
Texas Co., Silverman 1	480	3287
B. C. Morrison, Gibbs 1	*	3273

*Failures; †Junked; ¶Million cu. ft. gas.

NEW MEXICO

More penetration of Big Lime in Vacuum tests.

* * *

Two wildcats projected between Monument-Vacuum

Hobbs, New Mexico.—Greater penetration of the big lime was made by offsets to the east outpost producer of the Vacuum pool, Lea County, while trying to develop flowing production. This sector is structurally low, and the water table is unknown. Magnolia Petroleum Company's State 1-H, C NW NW 31-17s-35e, logged oil pay at intervals in drilling to 4587 feet, or 590 feet sub-sea. Hole was loaded with oil to drill in. It is a west offset to Skelly Oil Company's State 1-J, which flowed natural at 4545 feet, or 558 feet below sea level, but was acidized for completion gauge. Ohio Oil Company's State-Warn 1, south offset to the latter, is also taking in more of the lime section, with drilling underway at 4551 feet, or 560 feet sub-sea.

Only one of the 8 flowing producers in the field have been carried to the water table, and if it proves to be fairly constant operators can anticipate about 400 feet of broken lime pay without encountering bottom-hole water. Magnolia Petroleum Company's State 1-G, NW NW NE 24-17s-34e, second completion for the area, entered water at 4896 feet, or 879 feet below sea level, with first oil at 4459 feet.

Geo. F. Getty, Inc.'s State 1-F, C NE NE 36-17s-34e, failed to register a steady flow after using 3000 gallons of acid solution at 4550 feet, or 548 feet below sea level. It will be reacidized, and may be deepened. Nine rigs are operating in the area, including 4 on Magnolia Petroleum Company's State lands. The latter was drilling at 4400 feet on State 1-I, and at 800 feet on State 1-J, while surface pipe has been cemented on State 1-K. Amerada Petroleum Corporation's State 1-V-A was drilling at 480 feet, and State 1-V-B was rigging.

A wildcat oil strike for western Lea County was in prospect late last week when The Texas Company's Corbin 1, C NW SW 10-18s-33e, developed 800 feet of oil while drilling in red sand with cable tools at 4321 feet. A show of heavy oil appeared at 4267-69 feet and the gravity improved when additional saturated lime zones were penetrated. It has an elevation of 3984 feet. Location is 8 miles southwest of the Vacuum field and 6 miles southeast of the Maljamar pool, the oldest oil area in the county. The Texas Company holds permits on 5000 acres around its test.

Lea County added 5 new projects the past week, with an equal number of fields sharing the new work. Shell Petroleum Corporation is seeking to widen the north portion of the Cooper dolomite area in starting operations on J. W. Whitten 1, NE SW SE 33-23s-36e. It is an indirect west offset to Barns-

dall Oil Company's J. W. Whitten 2, which was completed recently flowing 82 barrels oil natural the first hour through 1½-inch choke from lime at 3556-3625 feet.

Continental Oil Company et al awarded contract for the drilling of Reed 4-B-24, C E½ NW SW 24-20s-36e, offsetting production in the northwest portion of the Eunice area. In the Penrose sandy-lime area, The Texas Company has started operations on C. P. Falby 3. C NE SW 8-22s-37e. Repollo Oil Company's Mosely 4, SW SE SE 34-24s-37e, Mattix area, has rigged up. In the Langlie oil and gas area, Culbertson & Irwin, Inc.'s Alston 2, NW SW NW 26-25s-37e, was drilling at 800 feet.

Nominal oil and gas showings were evident when bailing operations began on Continental Oil Company et al's H. E. Marsh 1, C NE SE 31-20s-39e, wildcat on east border of Lea County. Cable tools were moved in to drill plugs from 5½-inch pipe at 4022 feet and test after coring oil saturation at 4311-46 feet, with an elevation of 3571 feet. Previous development in the area proved discouraging, and no gas of any consequence is present.

Plugging orders were issued for The Texas Company's Welch 1, C SW NE 30-20s-31e, Eddy County wildcat, after encountering water in drilling to 2608 feet, with an elevation of 3564 feet.

Immediate drilling of two wildcats along the 15-mile interval of unexplored state land between the Monument and Vacuum fields became known late last week. Presence of a geophysical lime high between the above two fields has been known for months, and large interests have acquired lease on every tract that could be purchased. Continental Oil Company will help determine the merits of the play by drilling State 1-G, C SE SW 12-18s-35e, 6 miles southeast of the Vacuum area. Shell Petroleum Corporation's State 1-A, NEc 33-18s-36e, is 5½ miles northwest of Monument production. The latter held out for a northwest trend of production from the Eunice area a few years ago, and backed up the theory with leases and drilling with negative results. It later developed that the Eunice structure continues due north and the newer section was labeled Monument area.

Presence of oil production on the northeast flank of the geophysical prospect between Monument and Vacuum was revealed in 1930 when C. A. Fisher & Lowrie's State 1, NEc NW 11-18s-36e, made 50 barrels initial from lime at 5148-71 feet after plugging back from 5505 feet. Small yield, depth and isolated position resulted in the wildcat being abandoned.

NEW MEXICO Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
EDDY COUNTY—		
Texas Co., Welch 1, c sw ne 30-20s-31e	*	2608
LEA COUNTY (Cooper)—		
Barnsdall, Whitten 2, se ne se 33-23s-36e	2500	3625
LEA COUNTY (Eunice)—		
Gulf, Greer 1, c ne sw 21-22s-36e	27	3842
LEA COUNTY (Mattix)—		
Western Gas Co., Cowden 1, se se se 30-23s-37e	50	3625

*Failures; †Junked; ¶Million cu. ft. gas.

MICHIGAN FIELDS

Weather and title flaws delay new field development.

Mt. Pleasant, Mich.—Weather conditions and title flaws appeared this week as a probable setback to anticipated boom development in the new Edenville township, Midland County, district, opened last month by an 850-barrel Dundee lime producer, drilled by Chapman Oil Company, Devonian Oil Company and Associated Oil Company on State 1, Section 27-16n-1w.

Inability to get equipment is due to a combination of snow, mud and absence of roads in the district, has crippled planned activity. Mammoth Producing & Refining Corporation is drilling at 700 feet on the west offset to the discovery; three other tests are rigged, but no other tests have actually started.

Sun Oil Company with 85 percent of the play under lease has made two locations, one a quarter mile south of the discovery and another about a mile and a half south in Section 3-15n-1w, Jerome township.

The 80-acre tract offsetting the discovery lease on the north is now in court with Chapman, Devonian and Associated claiming lease, as part of their 320-acre original drilling block, on the one hand and Mammoth Producing & Refining Corporation also claiming title. Chapman et al started to build rig on the contested tract last week but this week ordered work halted.

Gordon Oil Company was reported to have successfully closed a deal with Carter Oil Company for an 80-acre lease in Section 26, a half mile east of the discovery.

Three miles southeast of the new Edenville play, Sun Oil Company is completing Dundee tests in Sections 5 and 9, both started before the Chapman well was drilled in. In Section 5, Sun Oil Company's State B-1, is now testing at 3860 feet after acidizing to a 1500-foot oil show. In Section 9, Sun Oil Company's Consumers 1, appeared non-commercial after drilling out 130 feet of the Dundee section and not logging oil or gas.

Western Michigan showed increased interest this week when S. B. Hood, trustee's Wright 1, Section 9-3n-13w, Monterey township, Allegan County, 5 miles south of the Salem field, flowed wild at 1610 feet, from Upper Traverse lime horizon, before 5-inch casing had been set. Fire followed the flow, estimated at 250 barrels in 8 hours, destroying the machine.

Operators are re-building machine and planned to run casing on the producing horizon this week.

Bentley township (17n-2e), 7 miles southeast of the Buckeye field, both Gladwin County, was given a three-well gain this week, when Gulf Oil Corporation and Mammoth Producing & Refining Corporation completed three offsets for light wells. With 12 strings now running in the district, including several scattered tests, the area should be well enough defined by early summer to either start a substantial drilling play or lapse into non-importance.

The Buckeye Producers Committee, organized in March, 1937, to handle proration in the Buckeye field, has been dissolved, James C. Graves, the committee's chairman, announced this week. Proration in the future he said would have to come from pipe lines.

The committee maintained an office in Mount Pleasant, directed by O. H. White, as umpire, and succeeded, until about six weeks ago, in securing about 80 percent cooperation in a voluntary proration setup in Buckeye of 75 barrels to the well. An attempt to put a 20-barrel prorate in effect failed in January.

An administration bill is almost certain to be introduced in the next regular session of the legislature for oil control, and is likely to have backing of the majority of the industry, which currently is about agreed that voluntary proration cannot be effective.

MICHIGAN Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ALLEGAN COUNTY—		
Mich. Devonian, Brower 4, sw se se 17-4n-13w	40	1607
Regal Dutch, Smith 1, sw ne nw 22-4n-13w	450	1582
ARENAC COUNTY—		
McClanahan Oil Co., Seignious A3, sw ne se 3-20n-4e	*	2587
GLADWIN COUNTY—		
Swanson Consolidated, Vantick 1, ne nw nw 30-17n-2e	*	3655
Sun, Strohkirch 6, sw nw nw 10-18n-1w	50	3651
Hart Oil Co., Soldan 3, nw ne se 12-18n-1w	525	3628
American Drlg. Co., Soldan 4, nw sw se 12-18n-1w	490	3626
Vorhees Drlg. Co., Fitzwater 3, sw ne ne 26-18n-1w	300	3590
ISABELLA COUNTY—		
Pure, Wille 11, nw nw nw 4-14n-6w	170	3667
Latham 3, ne sw se 32-15n-6w	*	3684
Mich. Cities Corp., Rhode 1, c s½ s½ 11-14n-6w	¶¼	1413
KENT COUNTY—		
Hirzel-Leland, Ouderman 1, sw se sw 29-5n-12w	*	2082
MIDLAND COUNTY—		
Roosevelt Oil Co., Campbell 11, se ne nw 17-13n-1w	2	3390
MONTCALM COUNTY—		
Jetter Drlg. Co., Eastman A1, sw sw sw 12-10n-5w	70	3193
MUSKEGON COUNTY—		
West Mich Consumers, Herman 1, c nw 35-10n-14w	*	2529
NEWAYGO COUNTY—		
Midstate Corp., Eichenberger 1, ne se nw 7-16n-11w	*	4460
OGEMAW COUNTY—		
Durham et al, Allen 1, nw nw se 20-22n-2e	70	2690

*Failures; †Junked; ¶Million cu. ft. gas.

Oklahoma City.—A modified permit for construction of a carbon-black plant near Guymon in the Oklahoma Panhandle, has been granted Ben H. Ashe by the Oklahoma Corporation Commission. The 10-year permit, made assignable, is similar to one granted Stanley Marsh, Jr., of Amarillo, Texas, allowing utilization of not more than 60,000,000 cubic feet of gas daily, which must be purchased ratably from all producers offering to sell.

CALIFORNIA FIELDS

World's deepest hole getting deeper with no oil showing.

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Two are drilling below 10,000 feet in Kern County field.

Los Angeles.—Operators in California continue their efforts to develop production at extreme depths, and February 24, Continental Oil Company's K.C.L. A-2, in Kern County, near Wasco, was drilling at 13,750 feet in sand and shale, but without any oil show. Officials of the company have not given up hope of picking up an oil sand capable of producing. This world record depth well picked up some oil sand in a core taken from 12,603 to 12,615 feet. Since that depth the formation has been mostly hard shale. It is understood that more hole will be made as long as no mechanical troubles develop. Cores are taken frequently, in fact an effort is being made to core every inch as the drill goes deeper.

Two operators are drilling below 10,000 feet in the Rio Bravo field in Kern County. Superior Oil Company's Wagner 1, Section 35-28-25, is coring at 10,790 feet in shale. Noticeable ditch showings have been in evidence since 10,400 feet. In this same field, Union Oil Company's Kernco 2-23, Section 34-28-25, is coring hard brown shale at 10,215 feet. The discovery well for the Rio Bravo field was Union Oil Company's Kernco 1-34, with total depth of 11,302 feet, which was completed November 5 for 2552 barrels of 39 gravity clean oil, has been choked back to 400 barrels a day. This is the world's deepest producer and it is understood that the field will be curtailed to an extreme extent. Union Oil Company is taking the lead in effort to hold this daily production back.

At Kettleman Hills, Kettleman North Dome Association's No. 4-18J, Section 18-17-17, deep test for that area, with total depth at 11,746 feet, plugged depth at 10,810 feet, is now producing 1489 barrels of 2817 gravity oil, cutting 42 percent. It started out making 988 barrels of 28 gravity oil, cutting 50 percent. Standard Oil Company's No. 27-21J, Section 21-21-17, is coring brown shale at 10,165 feet. This hole is seeking the same production formation found by Kettleman North Dome Association and Superior Oil Company. Last casing landed in Standard Oil Company's well was 9⅝-inch at 7963 feet. Superior Oil Company's Huffman 5, second well to find production in the deep zone at Kettleman Hills, North Dome, total depth 10,746 feet, is producing 520 barrels of 45.8 gravity oil, cut 4 percent, with 2,857,000 cubic feet of gas. This hole landed last casing, 4¾-inch at 10,319 feet. It is expected that several others of the present North Dome producers will be drilled deeper, but there will not be any excess drilling, as leases are held in large tracts.

Standard Oil Company's K.C.L. 11-2, Section 20-29-26, in the Greeley district of Kern County, had a job of trying to loosen drill pipe with bottom at 10,040 feet. Near Huron in Fresno County, Pure Oil Company's S. P. 1, Section 31-18-17, with bottom at 10,441 feet, has completed successfully a fishing job and is now coring hard brown shale.

Union Oil Company's deep test at Santa Fe Springs is being plugged back from bottom of 11,314 feet, 3½-inch liner has been perforated at 10,529 to 11,150 feet. The hole is being swabbed without results.

The Elwood field in Santa Barbara County, is the scene of much reworking of old wells in an effort to hold up production. Daily average production has been ranging from 7000 to 8000 barrels, with most of the wells on gas lift. Operators are plugging back or rather casing off the Vaqueros formation in a number of old wells, with some degree of success. Barnsdall Oil Company's Rio Grande-Bell 10, total depth 3389 feet, after being plugged to 2535 feet, is making 125 barrels of 26 gravity oil, cutting 20 percent. Honolulu Oil Corporation's No. 90-4, has been plugged from 3420 to 2000 feet and is good for 150 barrels of 26 gravity clean oil. It is understood this procedure will follow at a number of the older wells.

In the Half Moon district of San Mateo County in north part of California, Wilshire Oil Company's Cowell 1, deep test in Section 20-6-5, is drilling in hard Pourissima shale at 7690 feet, with showing of oil and gas on the ditch. In years past, shallow production was developed in this area, but not in sufficient quantities to justify a large drilling campaign. This hole is the deepest ever drilled in the area.

It is expected the central committee representing California producers will increase the unofficial allowable for production in the state for March slightly over the present, on advice of the Bureau of Mines. But the so-called allowable means very little as the state constantly exceeds the amount set. During the first 16 days in February, daily average production slightly exceeded 737,000 barrels against the allowable of 648,955 barrels. This compares to a daily average of 713,188 barrels during the first 16 days in January.

Wilmington is the worst offender among the various fields, since its production is running from 93,000 to 96,000 barrels a day against an allowable of 52,790 barrels. Large wells are being completed in the new area of this field, and apparently the operators are able to move most of their oil. The field is close to Long Beach where a number of small refineries are located, and the oil can be trucked at small cost. Oil moving in this manner is largely from small operators. The larger operators have access to pipe lines.

The new Santa Maria Valley field is more easily controlled since there is only one pipe line serving the area, and the crude is not desirable. The pipe line restricts its runs to need for the oil. So far, there has been no talk of another line. Some oil is being trucked out.

CALIFORNIA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
TORRANCE—		
Torrance Oil Co., No. 1	180	4996
WILMINGTON—		
Long Beach Harbor Oil Co., Cedarholm 1	4070	3805
Richfield, Star Drlg. 1	165	3325
Superior, Back Bay 14	125	3015
Allied Pet. Corp., No. 24	225	3005
General, Harbor Com. 2	200	2992
Harbor Com. 7	2400	3900
Bankline Oil Co., U. P. 4	6200	3890
KETTLEMAN HILLS—		
Standard, No. 76-1P	1485	8474
RIO VISTA—		
Amerada, McCormack 1	¶34	4385
SANTA MARIA—		
Hancock & Bush Oil Co., Rosenbloom 2	4000	4438
SOUTH BELRIDGE—		
Wallace Taylor, F. K. Land 1	*	1250
TEJON RANCH—		
Honolulu Oil Corp., S. P. 1	*	8005
Petrol Corp., No. 1	*	6004

*Failures; †Junked; ¶Million cu. ft. gas.

ROCKY MOUNTAIN FIELDS

Colorado wildcat will test showing at 4813 feet

Casper, Wyoming.—Several wells are at completion stages this week in the Rocky Mountain territory. The important wildcat test well in eastern Colorado, being put down by Gulf Oil Corporation on the Arena structure, has reamed hole to 4805 feet and is running 10¾-inch casing to this depth. Plans are to drill in with cable tools to test production found in a 5-foot saturated section of the Shawnee formation at 4808-13 feet, the latter being total depth. This is Union Pacific-Larsen 1, CSE NW Section 13-13s-49w, in Cheyenne County.

General Petroleum Corporation is coring at around 6543 feet in Government 1, NW NW SE Section 21-35n-77w, on the Cole Creek structure, in Natrona County, central Wyoming, feeling for the Wall Creek objective sand expected at around 6550 feet. The well holds the center of the stage as the most important wildcat test well in central Wyoming.

In the Big Medicine Bow field, Carbon County, southern Wyoming, operated jointly by Ohio Oil Company

and The California Company; the companies' Union Pacific-Johnson 6, SW SE 23-21n-79w, found water shows rated at 67 barrels per hour in the second Sundance horizon at 5577 feet, and backed up with 100 sacks of cement to run a test of the upper level of the Sundance series at 5330-50 feet. Wm. Kyle 4-A, NE NE Section 26-21n-79w, is nearing the top of the Sundance horizon with hole reported at 5202 feet this week.

Ohio Oil Company's Converse Sheep Company 8, CNW SE SW Section 32-36n-65w, central location in the Lance Creek field, Niborara County, eastern Wyoming, topped the Leo objective sand at 4924 feet this week and drilled to 4994 feet. Seven-inch casing has been cemented on top of the sand and is waiting on cement to set before drilling in.

A production test is being run in the Morrison formation in The Texas Company and The California Company's Freeman 1, CSE NW 35-2n-94w, joint well on the Wilson Creek structure, in Rio Blanco County, northwestern Colorado. The hole has been plugged back to 6700 feet in the base of the Morrison and is testing through perforations. It found water in the lower sections of the Sundance horizon.

Heavy rotary equipment is being moved from Sinclair-Wyoming Oil Company's Lost Soldier 77, SE NE NE 10-26n-90w, Lost Soldier field, Sweet Water County. Hole bottoms at 4046 feet in the Tensleep and made 40 barrels of oil on a 3-hour swabbing test. It has not been officially completed as storage facilities in the field are filled.

Important west extension test of the Lance Creek field, C. L. Price's Lamb 1, NE NW NW Section 7-35n-65w, ½-mile west of Mackinnie Oil & Drilling Company's Thomson 2, is trying to loosen drill pipe stuck in hole at 4993 feet.

Wildcats Showing

Two wildcat wells in the north central Wyoming district are making interesting showings this week. J. W. Bales' Government 1, W SE SW 28-43n-93w, in the Red Basin area of Hot Springs County, reports a good show of black oil in the Madison lime around 1000 feet. The oil is said to be exceptionally heavy and may require electrical heating such as is in use in the Osage field to bring it to the surface. A non-inflammable gas was found at around 270 feet in the hole of Delaware Oil Company's Skelton-Government 1, SE SE Section 2-43n-93w, on the Red Rose structure, but was checked as non-commercial and cemented off. Samples of the gas were sent to Washington to determine the possibilities of helium content. Analyses of the samples have not been released.

MOUNTAIN STATES
Completions

MONTANA

Company, Well and Location	Init. Prod. Bbls.	Depth
John Marshall, Allotted 3-119, ne sw 1-32n-69w	50	3081

WYOMING

Stanolind, Wyoming Oil Co.-Tensleep 11, cne sw 35-40n-79w	132	4027
Wyoming Associated Oil Co.-Tensleep 11, cne nw 35-40n-79w	137	4043

*Failures; †Junked; ¶Million cu. ft. gas.

ARKANSAS

CLAY COUNTY—Canadian American Oil Co.'s Smith 1, c ne nw 9-20-8, elev 375 ft, top Nacatosh 800 ft, sd 1005 ft, shale.

CLEVELAND COUNTY—Marwick & Olds' Aubrey Vance 1, nw nw 18-11-11, spd.

CRITTENDEN COUNTY—Manning & Martin's Cartright 1, se nw sw 16-7n-8e, sd 4230 ft, sand & shale.

COLUMBIA COUNTY—Kerr-Lymn Oil Co.'s Barnett 1, se sw ne 14-17-20, elev 321 ft, top Permian lime 7618 ft, cored sat lime 7659-64 ft, set 7-in csg at 7051 ft where it hung, dr plug, showed sw, ran electrical tester, coring 7720 ft. Standard of La.'s Bodcaw Lbr. Co. 1, c se ne 18-16-22, elev 253 ft, base massive anhydrite 3422 ft, top Travis Peak 4312 ft, dr 5896 ft; Crone 1 (formerly D. E. Thomas 1), c nw se 8-16-22, elev 271 ft, top anhydrite 3288 ft(dr 4928 ft; W. P. Phillips 1, se 15-17-19, spd dr 455 ft. E. O. Olds' Mary Dennis 1, nw se sw 4-17-21, elev 296 ft, wodd, td 4513 ft.

DESHA COUNTY—Columbian Fuel Corp.'s Victoria Cross 1, sw sw 34-8s-3w, rur.

HEMPSTEAD COUNTY—Easton, May & Murdock's R. M. LaCrone 1, ne ne 5-12s-26w, pb to 1000 ft to straighten crooked hole, old td 2944 ft.

JOHNSON COUNTY—Ark. La. Gas Co.'s Hudson 2, se nw 14-10-24, mim.

LA FAYETTE COUNTY—Lyons & Neely's Lillian Taubel 1 (Tatum fee), c se nw 18-16-22, elev 252 ft, top first anhydrite 3279 ft, top massive anhydrite 3298 ft, top lower Travis Peak 5307 ft, coring 7108 ft. L. E. Tennyson, Jr.'s Fee 1, sec nw ne ne 13-16-23, mim.

LITTLE RIVER COUNTY—Henan & Coe's W. D. Waldrop 1, woc 10-in surf csg. J. G. Strahan et al's Dierks Lbr. Co. 1, sw se 21-12-28, coring 2320 ft.

LONOKE COUNTY—J. W. Eddington et al's Anderson 1, nw ne 7-4-9, rur. Frank Silver's Jos. Chambers Est. 2, 17-2n-7w, sw abn td 1500 ft.

MILLER COUNTY—F. F. Earles' General American 1, sec sw 20-14-26, lcn under water.

UNION COUNTY—E. G. Bradham's S. L. Robbins 1, sw ne 12-19-16, rur.

ILLINOIS

BOND COUNTY—Universal's Molden 1, nw nw nw 24-6n-4w, sd 2045 ft. Whitehead's Pollan 1, nw se sw 26-6n-2w, sd 2633 ft. McBride's Butler 1, nw sw se 30-4n-2w, sd 1100 ft. Gigall's Neillson 1, ne ne nw 32-5n-4w, lcn.

CLAY COUNTY—Shelby O&G Co.'s Nodacker 1, nw se sw 23-3n-7e, cor 3110 ft. Milburne's Striegle 1, se nw ne 19-3n-8e, dk. Bonnis Oil's Schnautz 1, se sw ne 31-4n-8e, cor 3036 ft. Wicklund's McCauley 1 "A", ne sw nw 7-2n-9e, dk. Campbell's Henderson 1, cn½ ne ne 7-4n-7e, c & p. Carter's Cox 1, ce½ se sw 14-4n-5e, dk. Monnie Oil's Walker 1, se se nw 21-4n-8e, mi rot.

CLINTON COUNTY—Dalton's Clifton 1, ne sw sw 15-1n-4w, dr 1425 ft. Ellzy's Williams 1, sw nw sw 1-3n-1w, dk. Schlosberg & Siegel's Monken 1, ne sw sw 4-2n-1w, co 1370 ft. Watkins & Wright's Wise 1, nw nw se 24-1n-3w, mim. Phelps' Gubser 1, cw½ w½ nw 4-3n-2w, abd 1403 ft. Holley & Willis' Hughes 1, cn½ ne nw 18-3n-2w, straight reaming 1185 ft. Noll & Max Conrey's Barth 1, nw se sw 12-1n-1w, td 1393 ft; swb 75 bbls fluid, 8 hrs, co & swbng. Gross' Eversgerd 1, sw nw sw 22-1n-4w, set 6 in csg 921 ft. Adams O&G Co.'s Heirs 1, se se ne 13-1n-1w, td 1370 ft, p. 284 bbls oil, 24 hrs, comp. Lilly's Siegler 1, nw ne ne se 12-1n-1w, dr 700 ft. Brookside Oil's Dodillet 1, sw sw nw 21-1n-1w, dr 1020 ft. Thompson-Self's Hanseman 1, se nw ne 12-1n-1w, woc 521 ft.

CUMBERLAND COUNTY—Jolly-Hill-Stipes' Jenkins 1, se ne ne 30-10n-9e, td 2130 ft, ur 6 in csg. Kapschuell's Oakley 1, sw ne sw 34-10n-8e, mirt. Nat'l Consumer's Vanderhuff 1, nw ne nw 19-9n-9e, mog.

EDWARDS COUNTY—Cotton & Laller's Hays 1, ne ne ne 4-1s-10e, lcn.

EFFINGHAM COUNTY—Kingwood & Carter's Bartel 1, ce½ ne nw 26-6n-5e, td 4102 ft, testing. Hollis Haarman 1, nw se sw 32-8n-6e, abd 2709 ft. Kingwood's McWhorter 1, ce½ se nw 15-6n-6e, mi rig. Graham-Duncan's Richers 1, cn½ se nw 18-6n-7e, mirt.

FAYETTE COUNTY—Carter's Miller 1, cw½ nw nw 12-8n-3e, pb to 2950 ft, broke pipe, co. Farrely's Lilly 1, se sw se 16-8n-3e, ur 8 in csg. Wilson & Stokes' Fee 1, nw sw ne 14-8n-3e, lcn. Greer's Metzger 1, cn½ ne nw 19-5n-2e, spd & sd. Ryan & Redgraves' Jones 1, cs½ ne 24-9n-1e, sd 1815 ft.

GREENE COUNTY—Yeager's Robinson 1, se sw nw 17-10n-11w, abd 2555 ft.

HAMILTON COUNTY—Carpenter's Clark 1-A, nw nw sw 32-3s-5e, sd 2160 ft.

JACKSON COUNTY—Stanolind's Leiner 1, se se nw 20-7s-4w, dr 3350 ft.

JEFFERSON COUNTY—Sturbois & Tomberlin's Osborne 1, cnw se 8-2s-2e, dr 2085 ft. Nollen & Benoist's Kelley 1, ne nw ne 25-4s-2e, ur 6 in csg. Dee's Hamilton 1, ne sw nw 20-4s-3e, td 2911 ft. Sturbois & Tomberlin's Morris 1, nw nw sw 6-2s-2e, dr 1500 ft. Myers Bros.'s Duckworth 1, ce½ sw ne 33-4s-4e, rig. Carpenter's Skinner 1, sw nw ne 36-4s-2e, rur. Dee & Foltz' Hamilton 2, sw sw nw 20-4s-3e, rur. Carter's Douthit 1, ce½ ne se 9-1s-2e, td 1962 ft, woc.

MARION COUNTY—Siegel & Schlosberg's Roddy 1, sw se sw 20-2n-3e, sd 2182 ft. Marion Oil's Wilson 1, ne ne se 18-3n-3e, sd 1475 ft. Hackman & Harris' Britt 1, nw nw nw 36-4n-1e, sd 1050 ft. Mahutske Oil's Nichols 1, se sw se 12-4n-4e, td 2880 ft, dr plugs. McBride's Clow 1, sw sw se 29-2n-1e, dr 1895 ft. Dalton's Ira Dalton 1, nw se ne 19-1n-3e, rur. Oil Royalties' Suggs 1, csw nw nw 11-2n-1e, mach on ground. Coyer's Mulvaney 1, se ne se 6-2n-4e, dk. Shedden's Rawlica 1, sw ne sw 33-2n-1e, dk.

MASSAC COUNTY—Kahle's Harvick 1, sw sw sw 23-14s-3e, dr 2861 ft.

MONTGOMERY COUNTY—Cassidy's Nieman 1, cse sw 29-8n-5w, pb to 717 ft, sd. Myers' Klekamp 1, sw sw se 29-8n-5w, mach.

RICHLAND COUNTY—Mammoth's McCauley 1, sw se nw 28-3n-9e, co 3146 ft. Ray & Alford's Franklin 1, nw nw ne 34-5n-10e, dk. Parker's Berry 1, se sw ne 22-2n-14w, spd & sd. Bur-Kan's Allen 1, csw nw 27-4n-10e, td 3045 ft, p 193 bbls oil, comp. Miller & Ake's Schlichenmeyer 1, cne sw se 16-3n-10e, spd & sd. American Exploration's Johnson 1, cnw ne nw 29-4n-9e, rot dk. Gulf's Hill 1, cn½ sw nw 2-4n-10e, dr 2780 ft. American Nat'l Drlg's Everson 1, ne ne se 23-3n-9e, rig & sd.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*
‡—*salt water (completions).*
†—*junked and abandoned.*
¶—*million feet of gas.*
abd—*abandoned.*
bbls—*barrels.*
br—*building rig.*
bs—*basic sediment.*
csg—*casing.*
co—*cleaning out.*
dd—*drilling deeper.*
dk—*derrick.*
dr—*drilling.*
fsg—*fishing.*
ft—*feet*
hfw—*hole full of water.*
in—*inches.*
lcn—*location.*
m—*milling.*
mim—*moving in materials.*
mit—*moving in tools.*
mot—*milling on tools.*
n, s, e, w—*north, south, east, west.*
oih—*oil in hole.*
owdd—*old well drilling deeper.*
owpb—*old well plugging back.*
pb—*plugged back or plugging back.*
r—*reaming.*
rog—*rig on the ground.*
rur—*rigging up rotary tools.*
rust—*rigging up standard tools.*
sd—*shut down.*
sdtr—*sidetracking.*
sg—*show gas.*
si—*shut in.*
so—*show oil.*
so&g—*show oil and gas.*
spd—*spudding.*
sr—*straight reaming.*
sw—*salt water.*
td—*total depth.*
ur—*underreaming.*
wih—*water in the hole.*
wo—*workover.*
wocs—*waiting on cement to set.*
wosr—*waiting on standard rig.*

SHELBY COUNTY — Breaseale's Richardson 1, cnw nw 35-12n-14w, sd 198 ft. Farrior's Smith 1, ne ne ne 1-12n-2e, lcn.

WABASH COUNTY—Martin's Wood 1, ne se nw 31-1n-12w, dr 2200 ft.

WARDS COUNTY—Schmidt's Strenne 1, ne nw ne 5-1n-14w, spd & sd. Leach Bros.' Lee 1, sw ne se 11-1s-10e, dr 3080 ft. Cotton's Leibke 1, ne ne sw 20-1n-14w, c & p.

WASHINGTON COUNTY—Bitterman's Jesse 1, cse ne 16-3s-2w, dr 675 ft. Frost & Vickers' Frank 1, sw nw nw 28-1s-4w, rng 6 in csg, td 938 ft.

WHITE COUNTY—Heldt's Dagley 1, sw ne sw 12-7s-9e, c & p. Hunt's Smith 1, 11-5s-8e, dk.

KANSAS

BARBER COUNTY—Palmer Oil's Warwick 1, cnw 29-31s-10w, dr 3980 ft. Carter & Wentz's Lytle 1, cne nw 6-32s-14w, dr 2828 ft.

BARTON COUNTY—Price's Hanmeke 1, ne ne sw 12-18s-12w, pb to 3429 ft, est 20 bbls oil & 2 bbls wtr per day. Martin & Foraker's Dick 1, ne sw sw 31-19s-11w, mim & sd. Shell's Ehrlich 1, sw sw sw 1-16s-14w, dd to 3296 ft, 2800 ft oih. Day's Feltes 1, se se ne 14-16s-12w, sd 1875 ft. Sinclair Prairie's Oeser 1, ne ne se 17-16s-11w, dr 3115 ft. Texas Co.'s Lowry 1, cnl nw sw 2-17s-13w, td 3342 ft, aw/1000 gals. Murfin's Rexroot 1, nw nw se 14-17s-13w, br. Crown Pet.'s Schartz 1, sw se nw 7-20s-11w, bad hole at 1008 ft. Price's Wondra 1, nw nw ne 10-17s-13w, ru. Sinclair Prairie's Frederick 1, sw sw se 16-16s-11w, woc 507 ft. Silverstine & George's Otte 1, se se nw 2-19s-14w, mim.

BUTLER COUNTY—Steinbuchel's Fox 1, nw se ne 25-26s-3e, sd 1010 ft. Dustin's Miley 1, se nw ne 17-27s-5e, sd 810 ft. Saco, Kansas & Gulf's Pettit 1, sw nw sw 21-28s-6e, m m.

CHASE COUNTY—Duggy's Leedy 1, ne nw nw 26-22s-9e, dr 1415 ft.

CLARK COUNTY—Olson Oil's Lehman 1, se se sw 2-32s-21w, testing at 6807 ft. Olson Oil's Watkins 1, sw sw nw 23-32s-21w, pb to 6810 ft, woc.

COWLEY COUNTY—Dickey's Kansas G&E Co. 1, ne ne ne 22-34s-3e, abd 3790 ft. Trees & Talbott's McMinn 1, ne ne nw 16-31s-6e, sd 2903 ft. Brewer's McDaniels 1, sw sw sw 24-30s-4e, br. Palmer's Neimiller 1, ne ne ne 14-30s-4e, dr 2255 ft. Brewer's Clark 1, ne se nw 6-31s-4e, cem 5 in csg. Wakefield's White 1, nw nw ne 4-33s-4e, dr 1550 ft.

ELLIS COUNTY—Skiles' Jensen 1, sw se ne 26-12s-18w, sd 2910 ft. Duwe & Farris' Hadley 1, se ne se 12-11s-18w, set 7 in csg 3177 ft, dr cem. Bradley's Jensen 1, nw nw se 36-11s-19w, sho sulph wtr. Continental's Baumrucker 1, ne ne sw 25-14s-16w, dr 3030 ft. Helmerich & Payne's Stebbins 1, nw nw se 7-13s-20w, dr 3598 ft. Muth's Penney 1, cnl ne se 29-14s-18w, sd 350 ft. Witt & Sheridan's Hall 1, nw sw ne 1-12s-17w, rot rig. Hays & Sackrider's Windholtz 1, ne ne ne 2-13s-16w, SSG 3010-15 ft. Central Pet.'s Foster 1, csl se nw 33-11s-16w, dr 2166 ft. Western Kansas' Cole 1, ne se se 24-11s-20w, lcn. Carter's Foster 1, se se nw 1-15s-16w, rur.

ELLSWORTH COUNTY—Colonial's Hogg 1, nw nw sw 16-16s-10w, cem 6 in csg 3332 ft. Wixon's Peterman 1, sw sw sw 28-17s-10w, td 3306 ft, 100 ft oih 2½ hrs, est ½ bbls wtr per hr.

FINNEY COUNTY—Atlantic's Nunn 1, se se ne 27-21s-34w, rot rig.

GRAHAM COUNTY—Continental & Cities Service's Morel 1, cw½ e½ ne 15-9s-21w, mim.

GRAY COUNTY—Reynolds' Watkins 1, csw 32-28s-28w, rot rig.

GREENWOOD COUNTY — Whittaker & Johnston's Cannon 1, cel se nw 8-26s-13e, td 1504 ft, rung 5 in csg. Nichols' Central Life Ins. Co. 1, sw sw se 35-25s-12e, spd & sd. Whittaker's Bressner 1, nw nw se 8-26s-13e, dr 300 ft.

HARPER COUNTY—Franklin Drlg's Walts 1, ne ne sw 24-34s-6w, dr 3980 ft.

HARVEY COUNTY—Nat'l Ref Co.'s Brown 1, nw se ne 22-23s-2w, dr 3400 ft.

JACKSON COUNTY—Lemmick Oil's Marble Savings Bank 1, cne ne 26-9s-14e, sd 510 ft.

McPHERSON COUNTY—Pulse's Boesker 1, se se nw 29-20s-1w, rig. Phillips' Galle 1, nw nw ne 11-21s-2w, dr 3275 ft. Archer & Crane's Templin 1, nw sw se 32-17s-3w, dr 3025 ft. Darrah-Aurell's Decker 1, sw sw se 12-21s-2w, dr 750 ft.

MEADE COUNTY—Pacific Mid-West's Rexford 1, ne se sw 8-30s-29w, sd 200 ft. Barnett's Adams 1, sw sw ne 22-34s-30w, ru.

NESS COUNTY—Jones & Lane's Page Milling Co. 1, se se nw 36-18s-26w, co 3265 ft. Marshall's Anderson 1, sw sw nw 23-16s-24w, spd & sd. Trojan's Moses 1, csw nw 10-18s-25w, sd 500 ft.

OTTAWA COUNTY—Babcock Oil's Copeman 1, cnw ne 18-10s-2w, pits.

PRATT COUNTY—Cities Service & Atlantic's Delaney 1, csl ne 13-26s-12w, dr 1981 ft.

RENO COUNTY—Schneider's Kroecker 1, ne ne ne 12-22s-5w, dr 3977 ft. Carey's Mc-Pheeters 1, ne ne nw 22-26s-8w, dr 3637 ft. Cohen's Teter 1, se se sw 3-23s-5w, rig abd. McCole's Mathews 1, sw nw nw 15-24s-10w, ur 10 in csg 2230 ft. Skelly's Gorham 1, sw sw se 32-25s-10w, td 4403 ft, abd. Pulse's Payne 1, sw nw ne 4-22s-7w, td 3889 ft, abd. Cities Service's Kreie 1, cnw 27-23s-10w, dr 2600 ft.

RICE COUNTY—Price's Gemeinhardt 1, ne ne se 18-18s-10w, td 3298 ft, testing. Schneider's Sterling College 1, se sw se 28-20s-8w, dr 2220 ft. Cities Service's Habiger 1, sw sw nw 18-18s-9w, dr 1785 ft.

ROOKS COUNTY—Producers' Ham 1, sw sw nw 25-7s-19w, sd 330 ft. Graham's Fike 1, sw sw sw 9-9s-17w, sd 3370 ft. Witt & Sheridan's Morrison 1, nw se sw 29-10s-17w, rot rig. Elwell's Zimmerman 1, ne ne nw 15-9s-18w, sd 2711 ft. Duwe & Farris' Hancock 1, nw sw sw 21-10s-18w, dr 2646 ft.

RUSSELL COUNTY—Emrich's Anderson 1, ne se sw 33-15s-11w, spd & sd. Parks' Gorham Est 1, sw nw ne 19-15s-15w, dr 590 ft. Jones' Kuhnle 1, se se nw 4-15s-12w, dr 1015 ft. Hess' Reinhardt 1, ne ne sw 36-12s-14w, sd 2790 ft. Smith & Unruh's Stielow 1, nw nw nw 32-11s-14w, dr 785 ft. Atlantic's Boxberger 1, ne se nw 10-15s-14w, spd.

SEDGWICK COUNTY — Talbott's Downs Est 1, se se nw 32-28s-2e, testing. Union O&R's Howell 1, sw sw sw 6-29s-1e, co 2409 ft. Hudson's Fulton 1, ne ne se 35-28s-1e, fsg 1550 ft. McKnabb's Garrett 1, se sw sw 18-29s-1e, dr 2446 ft. Steinbuchel's McAdams 1, sw sw ne 28-29s-1e, dr 3624 ft.

STAFFORD COUNTY—Hipple's Moses 1, nw nw sw 9-22s-13w, pb to 3635 ft, aw/4000 gals. Terry & Feaster's Negley 1, sw sw ne 23-22s-12w, sd 3743 ft. Lindsey & Bailiere's Tiepermann 1, sw sw nw 32-22s-12w, dr 3663 ft. Cardinal & Carraker's Sittner 1, sw sw sw 4-22s-12w, td 3700 ft, swabbing. Carter's Andress 1, cnl se 2-21s-13w, td 3554 ft, sso, aw/1000 gals. Stanolind's Walker 1, ne ne sw 33-21s-12w, td 3625 ft, p pot 1638 bbls oil, comp. Carlock's Gates 1, se sw ne 34-22s-11w, td 3669 ft, abd. Rust's Hullman 1, sw sw sw 5-22s-12w, abd 3841 ft. Knight's McNickle 1, se se ne 2-24s-11w, cel. Nat'l Ref Co.'s Bonham 1, sw sw se 28-25s-12w, set 8 in csg 3605 ft, rust. Stanolind's Hahn 1, ne ne nw 14-22s-13w, dr 2750 ft. Hamilton's Hitz 1, ne ne nw 23-22s-13w, dr 3605 ft. Stanolind's Hill 1, ne ne sw 2-23s-12w, dr 3246 ft. Rust's Krankenberg 1, sw sw sw 20-22s-12w, mim. Continental's Fair 1, cnl sw 12-25s-13w, lcn.

SUMNER COUNTY—Saco's Phipps 1, sw se ne 24-30s-1w, spd & sd. Jones' Stunkel 1, se se sw 2-30s-1w, rig. Shawver's Stewart 1, nw nw se 4-32s-3w, dr 4180 ft. Colonial's Miles 1, se ne ne 30-30s-4w, mim.

TREGO COUNTY—Carlock's Kinzel 1, sw sw sw 9-13s-22w, spd & sd. Manning & Martin's Lynd 1, nw nw sw 16-11s-21w, dr 600 ft.

WOODSON COUNTY—Reeser's Weide 1, nw nw se 18-25s-14e, sd 1150 ft. London & Mendenhall's Slough 1, ne ne sw 9-24s-13e, dr 1675 ft.

SOUTH LOUISIANA

ACADIA PARISH—Humble's B. Finch 1, South Crowley area, 22-10s-1e, coring shale 8090 ft.

ALLEN PARISH—Humble's Bel 3, Bel prospect, 28-6s-7w, sd 2730 ft.

CALCASIEU PARISH — Shell's Calcasieu National Bank 1, Hayes area, 18-11s-5w, coring sand and shale 8429 ft.

CAMERON PARISH — Humble's Miami Corp. 1-B, Little Cheniere area, 7-14s-6w, dr shale 5645 ft. Superior's State 1, in Gulf of Mexico, 15s-8w, cutting and pulling 9394 ft.

EAST BATON ROUGE PARISH—Cavalier Oil Co.'s Elliott 1, n of Hope Villa, 3-8s-2e, changing bits at 7681 ft.

IBERIA PARISH—Texas Co.'s Bayless & Jones 1, e flank of Jefferson Island dome, 58-12s-5e, dr shale 1405 ft; same operator's State 4, Fausse Point, 35-11s-8e, coring hard sand 8052 ft; same operator's State 2-B, Vermilion Bay, 16s-5e, dr shale 6525 ft.

JEFFERSON DAVIS PARISH—Union Sulphur's Calcasieu National Bank 1, Woodlawn area, 12-9s-8w, comp 8286 ft, 43 bbls distillate daily; same operator's Calcasieu National Bank 2, 12-9s-6w, dr shale 3010 ft.

LAFAYETTE PARISH—Continental's Foreman 1, South of Scott, 36-9s-3e, dr shale 6722 ft.

ST. BERNARD PARISH—Gulf's State RR 3, Lake Borgne area, 6-12s-15e, dr piling.

ST. JAMES PARISH—Continental's Realty Operators 1, Hester prospect, 17-12s-5e, lcn.

ST. MARTIN PARISH—Carter & Stewart et al's Martin 2, Section 28 dome, 32-9s-7e, coring shaly sand showing oil 4365 ft. Shell & Tide Water's Unit 1, w Lake Verret prospect, 11-14s-12e, coring sand 8850 ft. Texas Co.'s State 4, Lake Mongouloi area, 14-10s-9e, dr 7734 ft.

TERREBONNE PARISH—Fohs' Buckley 1, Dulac area, 77-19s-17e, dr shale 3258 ft; same operator's State 1, La Terre area, 41-19s-19e, dr shale 3746 ft.

NORTH LOUISIANA

BIENVILLE PARISH—Gulf's Goodpine Oil Co. 1, se sw 25-14n-8w, elev 157 ft, massive anhydrite 5303-5420 ft, dr 8421 ft, red and black sandy shale. DeSoto O&G Co.'s Wm. Ashley 2, c sw se 15-16n-10w, rog; Wm. Ashley 3, c nw se 15-16n-10w, lcn. Hunt-Seaboard's Hodge-Hunt 1, se nw 36-17n-6w, rog.

CADDO PARISH—Olsen Drlg. Co. et al's Sharpe 1, c nw ne 10-18n-16w, dr 4620 ft, shale, strks anhydrite. A. D. Robinson et al's Dickson 1, 22-20n-14w, 5-3/16-in csg 2400 ft, cemtd short string 4-in csg after running electrical tester, arr perf in Tokio, td 2805 ft.

CATAHOULA PARISH—G. E. Foster et al's W. S. Peck 1, c s½ 39-10n-8e, 16-in csg 20 ft.

CLAIBORNE PARISH—Union Prod. Co. et al's Brownfield 2, c se nw 5-19n-5w, elev 235 ft, pb to 8850 ft, straightening crooked hole, old td 9964 ft; Kilpatrick A-1, 11-19n-6w, tested sw in Travis Peak, coring 6050 ft.

CONCORDIA PARISH—Edw. A. Addey et al's Pasternach 1, c nw sw 49-8n-9e, woc 480 ft.

DE SOTO PARISH—Clear Lake Oil Co.'s Woolums 1, nw nw 29-12n-12w, cored sand so

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sd for csg td 2694 ft. La. Seaboard's Lawrence 1, sw ne 36-12n-14w, spd.

LINCOLN PARISH—E. T. Oakes, H. D. Easton et al's N. L. Griggs 1, c sw 36-18n-1w, elev 199 ft, shot formation second time at 5932-41 ft, started to swab again, found hole bridged, dr out bridges, td 6260 ft.

MADISON PARISH—Continental Oil Co.'s Singer Mfg. Co. 1, c ne ne 3-15n-11e, mim.

MOREHOUSE PARISH—W. J. Furlong, Jr. et al's E. M. Clark 1, 10-20n-7e, elev 103 ft, top Permian lime 6218 ft, coring 6284 ft, hd white sandy formation.

NATCHITOCHES PARISH—Jos. E. Popkins' Peavy-Wilson 1, nwc 36-7n-9w, rur.

RED RIVER PARISH—Glassel & Whitehurst's LeLong 1, ne nw ne 25-12n-11w, sd 1810 ft, repr rig.

SABINE PARISH—J. C. Sutton Oil Co.'s Sabine Lbr. Co. 1, se nw ne 23-7n-14w, 9⅝-in csg 2132 ft, cored sand so 3580 ft, arr run formation tester, td 3580 ft.

TENSAS PARISH—H. B. Schumacher's Mounds Land Co. 4, 39-11n-12e, lcn.

UNION PARISH—Joe Modisett et al's Frost 1, ne sw 14-21n-1e, elev 188 ft, top Travis Peak 4050 ft, top lower Marine 6161 ft, recondition hole to dd to 9100 ft, td 7010 ft.

WEBSTER PARISH—Magnolia's Frank Sexton 1, c sw ne 32-23n-9w, elev 225 ft, 13⅜-in csg 838 ft, top first anhydrite stringer 4175 ft, top massive anhydrite 4348 ft, top Travis Peak 5701 ft, 9⅝-in csg 6838 ft, dr 7435 ft, Lunsford & Ferguson's Turner 1, 20-20n-8w, arr deepen td 1820 ft.

WINN PARISH—G. W. Zeigen's La. Cent. Lbr. Co. 13, 4-13n-1e, woc surf csg 63 ft.

MICHIGAN

ALLEGAN COUNTY — Eureka Dev. Co.'s Widenfeller 1, 29-4n-12w, sd 1200 ft. Lentz Tr.'s Allek 1, 33-4n-12w, dr 490 ft. Huges Heinig's Lundburg 1, 29-3n-14w, fsg 1400 ft. Stellard Tr.'s Schaffer 1, 29-3n-12w, dr 1530 ft. S. B. Hood's Wright 1, 9-3n-13w, testing, 1610 ft. Sprenger Bros.' Miller 1, 15-3n-13w, rust. Fletcher Carscallen's Van Dam 1, 3-4n-14w, dr 1700 ft. Vague & Nilsen's Vedetta 1, 25-2n-14w, sd 1550 ft.

BARRY COUNTY—Collin & Soper's Simmons 1, 3-4n-10w, dr 600 ft.

BAY COUNTY—C. W. Teater's Goodman 1, 28-18n-3e, dr 2610 ft.

CALHOUN COUNTY — Verona Crude Oil Co.'s Fruin 1, 29-1s-7w, dr 70 ft.

CLARE COUNTY—James McKay's Fee 12, 24-18n-5w, sd 1600 ft. Big Basin Oil Co.'s Murphey 1, 26-17n-3w, dr 800 ft.

GLADWIN COUNTY—W. E. Ross, Tr.'s Kinyon 1, 18-18n-2e, dr 3100 ft. Rex Oil Co.'s Auer 1, 22-18n-2e, Dundee 3263 ft, cmt 5-in cas 3301 ft. McClanahan Oil Co.'s Sharp 1, sw sw sw 9-19n-2w, rust. Franklin Pet. Co.'s State 1, 8-19n-2e, dr 1300 ft.

ISABELLA COUNTY — Bell-Marks, Inc.'s Fox 1, 5-13n-5w, dr 368 ft. J. V. Wicklund Dev. Co.'s Lawens 4, 24-15n-5w, dr 1200 ft. J. G. Zabel's Kennedy 1, 25-14n-4w, dr 1961 ft.

MECOSTA COUNTY — Mitchel Oil Co.'s Blodgett 1, c se se 22-13n-10w, mim. Sun Oil Co.'s Robart 1, 29-16n-7w, Dundee 3813 ft, hfw 3830 ft, sd. Jetter Drilling Co.'s Deakins 1, 28-13n-7w, dr 600 ft.

MIDLAND COUNTY—Sun Oil Co.'s State B-1, 5-16n-1w, testing, 3860 ft, swabbed 30 bbls oil after second acid and shot; Consumers Power Co. 1, 5-16n-1w, dr 3871 ft; State C-1, 3-15n-1w, rust. Wicklund Dev. Co.'s Royalty 3, 24-16n-2w, dr 1100 ft.

MONTCALM COUNTY—Smith Pet. Co.'s Williams 1, 17-11n-7w, csg 6-in 1390 ft. Socony-Vacuum Oil Co.'s Hansen 1, 22-12n-6w, dr 2400 ft. H. L. Gentry's Christensen 1, 29-11n-8w, sd 1255 ft.

OTSEGO COUNTY—Barton & William's Yuill 1, 9-32n-3w, dr 1310 ft.

OTTAWA COUNTY—Albert Maring's Flagel 1, 3-7n-14w, sd 1300 ft. Lentz & Miller's Kok 1, 29-5n-14w, dr 1675 ft.

MISSISSIPPI

CALHOUN COUNTY—S. and O. Properties, Inc.'s G. C. Cooner 1, se ne 12-24n-8e, dr 2104 ft.

CLAIBORNE COUNTY—Claiborne County Dev. Co.'s Ruth Hayden 1, s½ se 55-11n-2e, elev 199 ft, arr deepen td 1455 ft.

GEORGE COUNTY—Cleve Love et al's J. J. Newman Lbr. Co. 2, c sw 9-1s-8w, elev 111 ft, sd new boiler 105 ft.

HINDS COUNTY—Cleve Love et al's Montgomery 1, sw se se 28-6n-4w, lcn; S. F. Johnson 1, ne se 29-6n-1w, sd for new boiler 1270 ft. Black River Oil Co.'s Federal Land Bank 1, ne ne 11-15n-5e, elev 146 ft, top chalk 6961 ft, sd for heavier equipment, td 7150 ft.

LAMAR COUNTY—Southern Miss. Pet. Corp.'s Morris 1, nw se 4-2n-14w, dr 1162 ft.

PERRY COUNTY—Phillips Pet. Co.'s J. J. Newman Lbr. Co. 1, se se sw 21-2n-10w, elev 210 ft, dr 6997 ft.

SIMPSON COUNTY—Goodwill O&G Co.'s Berry 1, se sw 33-2n-4e, dr 1710 ft.

MONTANA

YELLOWSTONE COUNTY — Riverton Oil Co.'s Fox 1, cel nw nw sec 14-2n-23e, set 8¼ in. csg. 1996 ft, woc, td 1800 ft.

OKLAHOMA

ADAIR COUNTY—Maddox's Penn Mutual Life Ins Co. 1, cs½ ne nw 5-16n-24e, dr 260 ft.

ATOKA COUNTY — Sheldon & Gardner Pet.'s Lee 1, ne nw sw 2-4s-10e, sd 2416 ft. Stanolind & Amerada's Ridgway 1, nw ne ne 24-3s-9e, dr 2155 ft. Turner's Collins 1-A, sw ne ne 18-4s-10e, sd 1234 ft.

BECKHAM COUNTY—Mid-American's Biscoe 1-A, sw sw sw 28-8n-22w, dr 2660 ft.

BRYAN COUNTY — Southern's Henry 1, cnw ne 10-8s-7e, dr 3675 ft.

CADDO COUNTY—I.T.I.O. Co.'s Dome-Bo 1, cne se 29-6n-10w, td 6900 ft, to perf.

CLEVELAND COUNTY—Harper & Turner's Pollock 1, cw½ nw nw 13-9s-2w, dr by 6931 ft. Hollenback's Mantooth 1, nw nw nw 24-6n-1e, rig. Delaney's Bugher 1, se se sw 12-7n-2w, wo tools.

CHOCTAW COUNTY—Chapman & Lowe's Hallum 1, nw nw ne 4-7s-20e, sd 675 ft. True's Boby 1, nw se nw nw 17--7s-19e, td 2044 ft, temp abd. Ross' Hardy 1, se se nw 21-7s-15e, lcn.

COMANCHE COUNTY—Wolf's Costinus 1, sw sw se 30-4n-11w, spd. Scott's Kuntz 1-A, se ne se 27-4n-11w, sd 2800 ft. Roach's Green 1-A, se se sw 2-1n-13w, sd 550 ft.

COTTON COUNTY—W&P Oil's Worsham 1, nw nw se 15-4s-10w, lcn.

CREEK COUNTY—Mosier's Holcomb 1, se sw ne 19-18n-1e, td 3018 ft, 2000 ft wih & sso, sd.

GARFIELD COUNTY—Hollenback's Clark 1-A, nw nw nw 34-21n-6w, td 7336 ft, est 5 to 10 bbls oil per hr & 3,000,000 cf gas.

GARVIN COUNTY—Edwards' Clark 1, ne ne ne 16-3n-3e, pb to 2090 ft, rust.

GRADY COUNTY—Gulf's Thomas 1, sw nw nw 14-4n-5w, dr 10,553 ft. Doyle's Huffine 1, nw nw se 30-5n-8w, dk. Nicholson's Cleveland 1, nw ne ne 18-5n-8w, pits.

GREER COUNTY—Medlin's Broudie 1, nw nw nw 5-6n-20w, sd 90 ft. McDonald's Fite 1, se se nw 34-7n-21w, dr 992 ft. Gauntt & Baker's Parks 1, nw nw sw 29-7n-20w, sd 720 ft. Everitt's Graumann 1, ne nw nw 11-5n-21w, c & p.

HUGHES COUNTY—Phillips' Becker 1, ne nw sw 8-5n-10e, pb to 5760 ft, to test Wx sand. Doup's Bank 1, ne ne nw 7-7n-9e, fsg 335 ft. Rives' Hawthorne 1, sw sw se 19-7n-10e, lcn. Phillaine Morrison 1, se se sw 13-9n-10e, lcn. Amerada & Stanolind's Preame 1, nw nw se 29-9n-9e, rur.

JEFFERSON COUNTY—Massad & Swainsberger's Barrett 1, ne se se 14-6s-6w, sd 1890 ft. Weir's Hayes 1, se se nw 23-7s-7w, dk.

JOHNSTON COUNTY—Patton's McCrummens 1, sw sw ne 16-1s-6e, sd 1380 ft. Shelton's Chapman 1, cnw nw 26-4s-6e, fsg 3176 ft.

KAY COUNTY—Shaffer's McKee 1, ne ne nw 20-28n-1w, sd 2500 ft. Shaffer's Rudolph 1, ne ne sw 27-29n-1w, cel. Nye's Willin 1, se se sw 24-27n-4e, c & p.

KIOWA COUNTY—Hughes & Reese's Fultz 1, se se se 10-6n-18w, sd 1238 ft.

LINCOLN COUNTY—Wilcox's Royer 1, se se ne 18-14n-6e, rur. Stanolind & Amerada's Strader 1, nw nw ne 8-13n-3e, dr 3590 ft.

LOGAN COUNTY—Texas Co.'s Roper 1, cw½ sw se 22-15n-1e, sd 5542 ft. Arrow Drlg's Dodson 1, nw nw nw 23-17n-1w, sd 5046 ft. Carter's Lydick 1, ce½ nw ne 23-15n-4w, rig.

LOVE COUNTY—Sinclair Prairie's Peabody 1, ne ne ne 35-6s-2w, woc 1005 ft.

MURRAY COUNTY—Owens' Gryer 1, ne se ne 34-1s-3e, dr 2685 ft.

MUSKOGEE COUNTY—Cusack's Elliott 1, cnl nw sw 20-15n-20e, rog. Cusack's Fee 1, ne sw se 20-15n-20e, spd 65 ft.

OKFUSKEE COUNTY — Broswood Oil's Lehman 1, nw sw nw 21-13n-10e ,td 2854 ft, pop.

OKLAHOMA COUNTY—Allen's Weaver 1, ce½ se nw 6-14n-3w, dr 6245 ft.

OKMULGEE COUNTY — Phillips Pet.'s Woods 1, nw sw sw 31-11n-13e, td 3888 ft, abd. Detrick's McCann 1, nw se sw 33-14n-11e, dr 1000 ft.

OSAGE COUNTY—Norbla-Carter's Mullendore Trust Co. 1, nw nw nw 3-24n-6e, spd. Norbla's Osage 1, se se se 18-25n-7e, lcn.

PAWNEE COUNTY—Ross & Patterson's Morhain Heirs 1, ne ne nw 30-22n-7e, rig.

PAYNE COUNTY—Sagemore Drlg's Moore 1, se sw nw 17-18n-1e, rig. Helmerich & Payne's Ritchie 1, cne nw 34-18n-1e, dr 3823 ft.

PONTOTOC COUNTY—Union Dev. Co.'s Abbott 1, sw nw ne 34-3n-6e, fsg 3320 ft. Lee's Weatherly 1, nw se nw 24-1n-7e, dr 280 ft. Riddle's Fee 1, nw sw se 11-3n-5e, abd 4490 ft.

POTTAWATOMIE COUNTY — Hall & O'Mara's Shaw 1, ne ne se 32-6n-5e, dr 1850 ft. Davis' Jones 1, nw ne sw 34-6n-5e, dr 1850 ft.

ROGER MILLS COUNTY—Central Pet.'s Lambe 1, se se se 27-14n-21w, rig corners & sd.

SEMINOLE COUNTY—Woodson & Marydun Oil's Gilliland 1, se se sw 24-11n-7e, td 4295 ft, hfw.

STEPHENS COUNTY—Coline's Johnson 1, sw se ne 1-2n-8w, td 9086 ft, bailing. Helmerich & Payne's Pfile 1, sw sw sw 1-2s-7w, pb to 4020 ft, acidized and tested wtr, tools out. Parsons' Mouersberger 1, cs½ sw se 29-2n-8w, dk.

TEXAS COUNTY—Hagey's Peck 1, cne¼ 6-1n-13ecm, co 2842 ft. Hardendorf & Kuhn's Wiggin 1, cnw¼ 1-2n-14ecm, dr 1775 ft. Hardendorf & Kuhn's Wiggin 2, cne¼ 2-2n-14ecm, lcn.

TILLMAN COUNTY—Cockburn's Nicholas 1, se se se 28-2s-19w, dr 3025 ft. Gibson-Jennings' Burleson 1, se se sw 35-2s-19w, dk. Schoonover's Loftis 1, nw nw se 19-2s-18w, lcn. I.T.I.O. Co.'s Drumm 1, cn½ sw nw 32-2s-17w, abd 3843 ft. Martin's Parris 1, nw nw sw 3-3s-19w, dr 1840 ft (new hole). Grimes' Laney 1, nw nw nw 3-3s-18w, dr 2135 ft. Grimes' Hall 1, sw ne sw 12-3s-19w, lcn.

WASHITA COUNTY—McWhirter's Fee 1, nw sw sw 34-8n-19w, dr 2037 ft.

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SAN ANTONIO DISTRICT

ATASCOSA COUNTY—Allison's Mischwitz 1, Garza sur, lcn. S. W. R.'s Miller 1, tr 89, lcn.

BASTROP COUNTY — Franklin's Thaxton & Yarrington 2, Bangs sur, ru. Western Gulf's Barton 1, survey 6, reinstate, prep to dd from 2927 ft to 3200 ft.

BEXAR COUNTY—American's Oliver 5, Rodriguez sur, sd, waiting on orders. Fair's Hatch 1, blk 52, making abt 3 bpd, still being worked on, td 1190 ft. Hamill & Hamill's Brietzke 1, Rodriguez sur, setting csg on Austin chalk topped 1526 ft, td 1800 ft. Harrison, Fain & Smith's Schuwirth 1, Garza gr, dr below 170 ft. Hickok & Reynolds' Ewert 1, York sur, dr 1880 ft. Noake's Oppenheimer 1, Miller sur, wocs 18 ft. Parsynsen's Fee 1, Lindsay sur, dr 1600 ft. Philtop's Cassin 1, Rodriguez sur, dr 1078 ft. Rosenburg's Carle 1, Rolen sur, dr 835 ft.

BURLESON COUNTY—Red Bank's Coffield 1, Santef sur, mim.

CALDWELL COUNTY—Adams' Teas 1, Miller sur, dr 2145 ft, top chalk 1957 ft, oil show. Brady and Pummel's Jackson 1, Morris sur, cleaning out, flowed 8 bph oil for 4 hrs, bridged, td 2680 ft. Owens & Van Wagnen's Smith 1, Roe sur, fishing, td in Edwards limestone.

FRIO COUNTY—Pagenkopf & Jamieson's Houston 1, Figuerroa sur, swabbing, td 2651 ft.

GUADALUPE COUNTY — Edes' Harborth 1, Thomas sur, prep to resume dr at 100 ft. Kallison's Ranft 1, Burnham sur, ru. Spiller's Wright 1, Cottle sur, dr 1220 ft.

MAVERICK COUNTY—Wellington's Chittim 1, blk 7 of sec 129, dr 4043 ft; Chittim A-1, reported ran 800 ft csg to test shows above 2700 ft, will dd.

MEDINA COUNTY—Dykstra's McMenmey 2, Petty sur, lcn. Ewing's Riff 1, sur 42, mir. Trentman & Merrit's Carle 1, sur 72½, dr around 1410 ft.

MILAM COUNTY — Tuxedo's Graham 1, Cronea sur, dr 1120 ft, topped ch 870 ft; Graves 1, Robertson sur, dr 1130 ft, topped ch 880 ft.

TRAVIS COUNTY—Rios' Thaxton 1, Santiago de Valleo gr, lcn. Smith's Morell 1, Winburn sur, sd 620 ft. Texas Empire's Jourdan 1, del Valle gr, lcn.

UVALDE COUNTY—Wilcox' Morris 1, sur 380, dr 2774 ft in Buda limestone.

LAREDO DISTRICT

DUVAL COUNTY — Conroe's Trevino 1, Poitevent sur No. 1, lcn. Cowan & Sorey's Taylor 1, sec 214, dr 1500 ft. Culton's Sutherland 1, dr 1548 ft. Magnolia's Duval Ranch 1, sur 196, cor 2629 ft; Hoffman 1, sur 111, lcn. Petroleum Producers' Worden & Drought A-1, sur 159, mim.

McMULLEN COUNTY — Bennett's Nueces Land and Livestock, sec 21, ru. Collins' Hagist 2, sec 33, dr below 54 ft. Day's Wulff 1, sec 77, mim. Magnolia's Edrington 1, sur 85, cor 3071 ft.

STARR COUNTY—Clopton & Reed's Roos & Bennett 5, por 91 and 92, dr 108 ft. Collins' Guerra 1, 5813 ft, coring. Davis & Gutierrez 1, por 104, lcn. Sun's Guerra D-2, La Sacatosa gr, dr 58 ft.

WEBB COUNTY — Davidson's Aguilar 1, sur 472, mim. Gilcrease's Trafton 1, sur 282, sd 1945 ft. Hill's Adami 1, sur 345, ru. Moore & Meaders' Garcia & Villareal 1, sur 786, sd, swabbed some oil, perfs 2324-34 ft, depth 2337 ft.

ZAPATA COUNTY—Calvin's Lopez 1, sur 253, dk. Falcon's Yzaguirre, por 14, ru. Tomkins' Guitierrez 1, India gr, dr 450 ft.

DE WITT COUNTY—Richardson's McCurdy 1, Hunt sur, spudded.

GOLIAD COUNTY—DeArman & Winward's Drier 1, sur 7, dr 1250 ft.

HIDALGO COUNTY — Gulf States' Cardenas 1, sh 156, ru. Johnson's Daskam 1, blk 33, set 10-in at 216 ft, wocs. Sun's Krebs 1, blk 16, ru.

JACKSON COUNTY — Adams' Foust 1, White sur, dr 1400 ft. Humble's Davis 1, blk 150, lcn. Magnolia's West 1, trying to core at 6500 ft, junk in hole.

JIM WELLS COUNTY—Callaway's Garcia 1, share D, lcn. Magnolia's Seeligson 8, Los Jaboncillos gr, cor soft sand 5485 ft. Pressnal & Mosser's Mortgage 1, La Vaca gr, mim. Rowan & Hope's Adams 1, Adams ranch, testing through perfs 3224-29 ft, td 5509 ft.

KARNES COUNTY—Randon's Radford 1, Martinez survey, dr 3425 ft.

LIVE OAK COUNTY—Franklin's Russell 1, sp and sd, wo wtr. Hickok & Reynolds' Land Bank 1, Henry sur, dr around 1308 ft. Martin's Southern Life 1, sec 25, dr 950 ft. Newton's West 1, Pieratt sur, wocs, 65 ft. Parr's Brannon 1, sur 45, dr 3004 ft. Richardson & Karotkin's Poppe 1, subd 9, sp and sd, laying fuel line.

NUECES COUNTY — Andrade's Dunn 1, sur 422, dr 5120 ft. Camp's Wardner 4, Strat-

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ton subd, dst rec 350 lbs. press., 90 ft mud cut with high gravity oil, set 7-in csg at 6277 ft, total depth. Coastline's State of Texas 1, tr 314, will sp abt 3-14-38. Corpus Christi's Howington 1, sur 156, sp. Morgan's Fee 1, Roberts subd, ru. Renwar's Morgan 1, sur 413, td 5842 ft, woo, after dst 5824-42 ft rec 2000 ft sw, plug 700 ft wtr cushion, slight rainbow oil. Richardson's Baldwin 1, blk 5, prep to sp; Cowles 1, sec 43, dr 6510 ft. Rutherford's Stewart 1, sur 418, dr below 6680 ft. Temple's Singer 1, sur 421, dr below 5710 ft. Union's Brown 1, sec 87, dr 2720 ft; Galladay 1, Agua Dulce gr, cor 7848 ft; Rivers 4-A, cor 6203 ft.

REFUGIO COUNTY—Barnsdall & Transwestern's Fagan 1, Fagan sur, sp. Continental's Scott 1, Reojas sur, dr 5944 ft. Hogan's Kelly 2, Power sur, dr 5304 ft. T-N's Lambert 1, Refugio Town tr, dr 6311 ft.

SAN PATRICIO COUNTY—Bob's Green 2, Williamson sur, cored sand with g & dist show 6812-54 ft, td 6875 ft. Cain's Guy 1, sec 70, dr 6260 ft. Moore's Kelly 1, lot 24, dr 5285 ft. Smith's French 1, sec 65, mim.

VICTORIA COUNTY—Stanolind's Vandenberge 1, Benavides sur, cor 5225 ft. Superior & Gillespie's Mahon & Buehler 1, Valley Ditch Co. sur, dr 3765 ft.

WILLACY COUNTY — Magnolia's Armendiaz 1, Carricitos gr, dr 9435 ft. Sal Vieja's Garcia 2, sh 59, dr 4728 ft.

WEST TEXAS

(This report is confined to the north portion of the Permian basin).

ANDREWS COUNTY — Seaboard O&G Corp.'s Munger-Nix 1, c ne¼ PSL sec 1, blk A-41, elev 3250 ft, top anhydrite 1704 ft, bad hole, pb fr 1740 to 311 ft, top Yates 2950 ft, top solid lime 4270 ft, saturated lime (good porosity) 4445-61 ft, and less porosity 4461-79 ft, testing. Rogers & Rogers (was O. S. Black et al's) O. B. Holt-Sun 1, c nw nw PSL sec D, blk 43, elev 3127 ft, top anhydrite 1795 ft, top Yates 2970 ft, top solid lime 4225 ft, td 4541 ft, swab 15 bbls fluid per hr, 25 percent clear salt w. H. C. Wheeler & E. M. Wahlenmaier's F. E. Gardner 1, c sw sw PSL sec 15, blk A-35, elev 3177 ft, fighting cave 1130 ft. Fred Wright-J. W. McMillen (was American Liberty Oil Co.'s) E. P. Cowden 1, c ne nw PSL sec 14, blk A-55, elev 3114 ft, top anhydrite 1162 ft, salt 1250-2530 ft, top brown lime 2630 ft, top Yates 2710 ft, td 5001 ft, to dd to Ordovician.

BAILEY COUNTY—Geo. Etz et al's I. C. Enochs 1, c labor 66, league 182, Floyd C.S.L. sur, elev 3788 ft, top lime 3173 ft, salt water in lime 4139 ft, fsh bailer.

COCHRAN COUNTY—Geo. P. Livermore et al (was J. R. Meeker's) Mrs. D. Slaughter Wright 1, nwc sw¼ labor 26, league 96, Mills C.S.L. sur, elev 3774 ft, top anhydrite 2330 ft, top lime 4105 ft, first oil saturat on 4865-87 ft, tested 75 percent salt w at 4997 ft, pb to 4987 ft, used 3000 gals acid, then 8000 gals, testing. Honolulu Oil Corp.-Cascade & Devonian's T. B. Duggan 2, labor 13, league 55, Oldham CSL sur, rig. The Texas Co.'s Mallett Land & Cattle Co. 1, near nec PSL sec 7, blk G, rig.

DAWSON COUNTY—Ray Albaugh et al's Higginbotham 1, labor 24, league 269, Moore C.S.L. sur, lcn.

FLOYD COUNTY — Mills Bennett Prod. Co.'s Thos Montgomery 1, nec F. J. Latham sur No. 2, A-520, elev 3129 ft, top lime 3255 ft, lost dp 5082 ft, dr by junk.

GAINES COUNTY—Amerada Pet. Corp.'s J. B. Robertson 1, c sw sw W. T. Ry. sec 196, blk G, elev 3344 ft, top anhydrite 2113 ft, base salt 3092 ft, lime pay 5104-5112 ft, used acid and flowed 58 bbls 30.5 gravity oil 24 hrs, sd to cem lost tools in position to dr by. Continental Oil Co.'s G. M. Langdon 1-43, nec w½ sec 43, blk AX, used 6000 gals acid at 4975 ft, flowed 368 bbls initial; W. M. Moore 1-45, nwc e½ PSL sec 45, blk AX, dr 2190 ft; A. L. Wasson 2-B, sec sec 53, blk AX, elev 3555 ft, used 2000 gals acid in pay 4915-71 ft, flowed 495 bbls initial. Conoco & Amon G. Carter's G. M. Langdon 2-44, swc se¼ sec 44, blk AX, elev 3549 ft, used 6000 gals acid in pay 4940-84 ft, flowed 863 bbls initial via cas and tub; A. L. Wasson 5, nwc sw¼ sec 48, blk AX, elev 3553 ft, used 6000 gals acid in lime 4910-70 ft, flowed 1431 bbls and 1,760,000 ft gas open cas and tub. Ohio Oil Co.'s S. J. Averitt 2, c sw ne W. T. Ry. sec 228, blk G, cem 5½-in pipe 4898 ft, td 4919 ft. Plymouth Oil Co.-A. G. Carter & Conoco's H. Giesecke 1, nwc labor 1, league 296, Reagan C.S.L. sur, elev 3115 ft, top anhydrite 2270 ft, base salt 3150 ft, top brown lime 4540 ft, top solid lime 4930 ft, dry and abd in sul w 5800 ft. Shell Pet. Corp.'s G. N. Robertson 1, nwc ne sec 344, blk G, elev 3522 ft, top anhydrite 2210 ft, top brown lime between 4160 and 4180 ft, td 4674 ft, rust.

GARZA COUNTY—Gulf Oil Corp.'s S. P. Swenson Cattle Co. 1, c nw H&GN Ry. sec 25, blk 2, Ordovician test, sp 2-22-38. M. L. Richards et al's K. Stoker 1, nwc GH&H Ry. sec 33, blk 5, mim.

HOCKLEY COUNTY—Gulf Oil Corp.'s M. G. Gordon 1, nwc PSL sec 12, blk X, elev 3511 ft, top anhydrite 2261 ft, top brown lime 3850 ft, top solid lime 4170 ft, cem 7-in 4757 ft; Mallett Land & Cattle Co. 1, nec PSL sec 6, blk X, elev 3552 ft, top anhydrite 2220 ft, top brown lime 3860 ft, top solid lime 4200 ft, cem 7-in 4755 ft. Honolulu Oil Corp.'s Alex Slaughter 1-51, near swc labor 51, league 37, Zaballa C.S.L. sur, top anhydrite 2190 ft, top Yates 2800 ft, top solid lime 4140 ft, dr 4800 ft; Alex Slaughter 1-77, labor 77, league 37, Zavalla C.S.L. sur, lcn. Richardson Oils, Inc.'s Slaughter 1, swc labor 59, league 39, Maverick C.S.L. sur, elev 3547 ft, top anhydrite 2140 ft, top lime 4120 ft, lime pay 4917-94 ft, shot 380 qts 4895-4989 ft, flowed 239 bbls oil 10 hrs, testing.

KENT COUNTY—Thad A. Bryant Jr. et al's Haggins 1, c nw ne H&GN Ry. sec 118, blk 1, 3 mi nw Girard, dk; A. A. House 1, c ne PSL sec 10, blk B, machine. B. Dolman et al's C. V. O'Keefe 1, ne ne nw H&GN sec 50, blk 1, lcn.

LAMB COUNTY—Toddie L. Wynne, Tr.'s A. Neunschwander 1, 660 ft out of sec labor 1, league 660, State Capitol Lands, elev 3606 ft, top anhydrite 1712 ft, dr 5110 ft.

LYNN COUNTY—John L. Baldridge et al's Alamo Lumber Co. 1, ne sw sw HE&WT sec 151, 6 mi w New Home, elev 3267 ft, top anhydrite 2130 ft, top Yates (est.) 2900 ft, dr 4030 ft.

TERRY COUNTY — C. H. Hutto et al's Brownfield 1, near c of EL&Ry. sec 6, blk A-1, sd 670 ft.

YOAKUM COUNTY—J. L. Crump & Black Bros.' Bennett 1, swc e½ sw¼ sec 631, blk D, elev 3568 ft, dk. Bohago Oil Corp-Bond Oil Corp.'s J. L. West 1, sec sec 607, blk D, elev 3664 ft, top anhydrite 2275 ft, td 5302 ft, used 2 bbls acid, swab dry then cored oil saturated lime 5302-16 ft, testing. Denver Producing & Ref. Co.'s J. A. Whittenburg 3, c ne se sec 863, blk D, elev 3590 ft, used 7000 gals acid flowed 457 bbls initial at 5028 ft; Whittenburg 4, c nw ne sec 831, top anhydrite 2182 ft, testing at 5055 ft; J. A. Whittenburg 3-A, c se nw sec 830, dr 3700 ft. Gulf Oil Corp.'s J. C. Futch 1, nw se se sec 796, blk D, elev 3635 ft, top anhydrite 2175 ft, dr 4420 ft; S. J. Dixon 1, sw se se sec 609, blk D, elev 3638 ft, top anhydrite 2370 ft, top Yates 3100 ft, no porosity coring 5265 ft. Gulf States Oil Co.'s E. A. Graham-Gulf 1, near c s½ sw sec 267, blk D, mim. Honolulu Oil Corp.'s Bennett 4, sec sec 677, blk D, mim. Honolulu Oil Corp.-Cascade Pet. Co.'s Bennett 2, nwc ne¼ sec 678, top anhydrite 2410 ft, top Yates 3203 ft, dr 5180 ft; Bennett 3, swc ne¼ sec 678, dr 1800 ft. Humble's Abilene State Bank 1, sec PSL sec 37, blk AX, dr 4720 ft; J. H. Lynn 1, c se se sec 798, blk D, dr 4695 ft. Magnolia's J. D. Webb 1, swc ne sec 477, blk D, elev 3699 ft, rur. Mid-Continent Pet. Corp.'s Bennett 1, nwc sw sec 678, blk D, top anhydrite 2370 ft, testing after shot 5240 ft; Bennett 2, near c w½ w½ sw sec 678, blk D, dr 3400 ft. J. W. Murchison-L. Fikes' C. A. Elliott 2, c se ne sec 832, blk D, cem sur pipe. Ohio Oil Co.'s Fairman 1, c se se sec 797, blk D, used 2000 gals acid in pay 4835-5048 ft, flowed 8 bbls per hr, re-used 5000 gals acid, testing; L. N. Claywater 1, c nw nw sec 638, blk D, elev 3659 ft, top anhydrite 2160 ft, top Yates 2900 ft, used 2000 gals acid in saturated lime 5220-64 ft, swab dry; re-acidized 5000 gals, swabbed little oil. Shell's Geo. Baumgart 1-B, se¼ sec 829, blk D, elev 3591 ft, used 5000 gals acid in pay 4850-5010 ft, flowed 487 bbls 33 gravity oil initial; Baumgart 1-C, ne¼ sec 866, blk D, elev 3580 ft, top anhydrite 2238 ft, top Yates 3030 ft, top brown lime 4000 ft, top solid lime 4470 ft, lime pay 4988-5018 ft, flowed 7½ bbls per hr natural, 12 percent drl water; Baumgart 1-D, swc sec 826, blk D, elev 3562 ft, dr 300 ft; Ruth Bennett 2, sw se ne sec 677, dr 3600 ft. Sun Oil Co.'s J. H. Lynn 1, c ne ne sec 798, blk D, elev 3609 ft, top Yates 2950 ft, used 6000 gals acid in pay 4952-5065 ft, flowed 273 bbls potential. The Texas Co.'s N. W. Willard 1, c sw sw sec 799, blk D, elev 3614 ft, used 7000 gals acid in pay 4842-5085 ft, flowed 618 bbls initial; Willard 2, c nw nw sec 799, elev 3613 ft, top lime 4460 ft, used 7000 gals acid in pay 5015-5085 ft, flowed 252 bbls oil 21 hrs and quit; Willard 3, c se sw sec 799, elev 3607 ft, dr 1805 ft; Ruth Bennett 1, swc se sec 631, blk D, elev 3570 ft, dr 320 ft. T. P. Coal & Oil Co.'s Ruth Bennett 4, near c w½ nw sec 678, blk D, shot 720 qts nitro 5080-5275 ft, flowed 1399 bbls initial; Bennett 5, swc nw¼ sec 678, cem 7-in pipe 4640 ft; Bennett 6, near c n½ nw sec 678, rur; Bennett 7, nec sec 696, blk D, lcn. Toddie L. Wynne, Tr.'s Fairman 1, c se ne sec 797, blk D, elev 3627 ft, top anhydrite 2160 ft, broken pay 4964-5070 ft, testing; N. W. Willard 2, nwc PSL sec 38, blk AX, top anhydrite 2085 ft, lost drill pipe 4652 ft, dr new hole 4364 ft.

EAST TEXAS BORDER COUNTIES

CASS COUNTY—V. A. Hughes & Co.'s Lyster 1, Wm. Bateman sur, top Georgetown lime 4215 ft, sd 4670 ft. G. H. Vaughn's Ryley 1, J. Taylor sur, dr 5495 ft. G. H. Chambless' White & Walker Lbr. Co. 1, J. J. Potter sur (280 ac), dr 2805 ft.

HARRISON COUNTY—Ark. Fuel Oil Co.'s C. M. Abney 1, Eason Little sur, set 7-in short string to shut off gas sand at 2440 ft, arr to deepen td 4820 ft (Glen Rose).

PANOLA COUNTY—Preston et al's Rushing 1, Mannan Smith sur, owdd, td 2950 ft. Texas Co.'s Claude Adams 1, Thos. Cox sur, 13⅜-in csg 579 ft, dr 4839 ft, hd lime & shale.

SHELBY COUNTY—Joe Burnham et al's George 1, C. C. Tutt sur, owdd, td 2950 ft.

TEXAS GULF COAST

BRAZORIA COUNTY — Pure's Smith 1, Peach Point area, S. F. Austin sur, sidetracking 9100 ft; same operator's State Prison Farms 1, S. F. Austin sur, dr shale 3183 ft.

CHAMBERS COUNTY—A. A. Cameron's White 1, Canada Ranch area, S. Brill sur, lcn. Laverne Decker's Broussard Trust 1, Double Gum Bayou area, H&TC No. 30, dk.

GALVESTON COUNTY—Sun's Cade & Co. 1, Bolivar prospect, A. Dickson sur, canal.

GRIMES COUNTY—Hubert Holt et al's Greer 1, Carlos area, P. B. O'Conner sur, sd 2595 ft.

HARRIS COUNTY—W. S. Howell's Root 1, Battleground area, A. McCormick sur, sd 2800 ft.

JEFFERSON COUNTY—J. E. Harwell's State 1, in Gulf of Mexico, no report. Humble's McFaddin-State 1, in Gulf of Mexico, piling. Glenn H. McCarthy's Broussard Trust 1, Cheek area, C. Hillbrandt sur, comp. 105 bbls daily 7725 ft.

MATAGORDA COUNTY — Pierce Estate's Fee 1, n of Van Vleck, I. & G. N. sur, comp, 11 bbls per hour 6624 ft. Sun's Robbins 1, n of Citrus Grove, C. H. Vandeveer sur, dr shale 9914 ft.

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UTAH

GRAND COUNTY—Cane Creek Oil Co.'s Government 1, nw sw sec 31-26s-21e, dr 898 ft.

WYOMING

FREMONT COUNTY—Stanolind Oil & Gas Co.'s Johnson 1, cse se 3-33n-96w, dr 7617 ft.

HOT SPRINGS COUNTY—Delaware Oil Co.'s Skelton-Government 1, se se 2-43n-93w, sg 270 ft, cemented off and woc before dr ahead. J. W. Bales' Government 1, w se sw 28-43n-93w, testing at td 1000 ft.

NATRONA COUNTY — General Petroleum Corporation's Government 1, nw nw se 21-35n-77w, coring at 6543 ft for Wall Creek objective expected at around 6550 ft.

NIOBRARA COUNTY—Lewis Gokel's 1, ne se nw 31-35n-62w, abd 1450 ft in red beds.

KANSAS
Completions
(Week Ending February 19)

Company, Well and Location	Init. Prod. Bbls.	Depth
BARTON COUNTY—		
Palmer Oil, Casey 1, sw sw ne 4-16s-13w	1874	3330
Cities Service, Bitter "E" 1, nw nw ne 17-16s-13w	1962	3398
Phillips, Kroutwurst 2, ne nw sw 11-17s-11w	*	3364
Stanolind, Wm. Panning 9, e½ nw¼ 10-20s-11w	*	3410
BUTLER COUNTY—		
Wixon et al, Long 1, se se se 2-25s-3e (pb 2718)	*	2704
Nat'l Ref. Co., E. Pray 1, sw nw sw 31-27s-3e	204	3107
CHAUTAUQUA COUNTY—		
I. W. Sigel, Temple 1, sw sw sw 31-32s-12e	*	400
Harrison, H. K. Brown 1, ne se ne 19-34s-10e	*	820
ELLIS COUNTY—		
Magnolia, Johansen 9, sw ne se 22-11s-17w	2662	3418
Cities Service, Hall "B" 5, sw sw nw 26-11s-17w	2633	3411
ELLSWORTH COUNTY—		
Marlyn Oil et al, Stratman 1, ne nw se 23-16s-10w	*	3461
Magnolia, Andrea 6, nw sw sw 7-17s-10w	257	3106
GREENWOOD COUNTY—		
Veeder Supply Co., Roth-Faurot 1, se nw sw 7-25s-9e	*	2460
HARVEY COUNTY—		
Shaffer et al, Dreese 2, sw ne ne 2-23s-2w	5000	2986
T. P. Henry, M. Devine 1, nw sw ne 30-23s-3w	753	3356
McPHERSON COUNTY—		
Continental, H. Meyer 1, ne ne se 19-21s-1w	*	3490
RENO COUNTY—		
Cities Service, Haurey "A" 1, ne ne sw 1-23s-4w (pb 3368)	65	3375
Witt et al, Fair 1, nw se se 4-22s-8w	326	3395
RICE COUNTY—		
Herndon Drlg. Co., Froning 1, nw nw nw 15-18s-8w	*	3405
Continental, Connery 2, ne se se 36-18s-8w	2411	3247
Skiles et al, Campbell 1, se se ne 28-19s-9w	285	3210
Atlantic, Hopkins "B" 3, nw nw sw 6-21s-7w	1228	3334
ROOKS COUNTY—		
Don Leavell, Baxa 2, cw½ w½ nw 12-9s-17w (otd 3355) (pb 3350)	794	3473
RUSSELL COUNTY—		
Continental, Rein 1, sw sw nw 27-14s-13w	1688	2917
Transwestern, F. Polcyn 4, sw sw ne 10-14s-15w	1248	3276
Darby, Dumler "C" 3, se sw ne 11-14s-15w	974	3080
Gulf et al, Klusher 1, se se se 27-15s-12e	*	3375
Coralena, Michaels 1, se sw se 19-15s-13w (pb 3268)	788	3274
Michaels 1, nw ne nw 2-15s-14w (pb 3064)	1367	3202
SEDGWICK COUNTY—		
D. W. Murfin et al, Martin 1, se se nw 18-28s-1e	27	3491
STAFFORD COUNTY—		
Stanolind, Paul Spangenburg 5, ne sw sw 29-22s-11w	1792	3593
Stanolind, Schilling 1, se se nw 12-22s-13w	15	3716
Torrey & Feaster, Haggy 1, ne ne sw 26-23s-11w	*	3888
J. C. Shaffer, H. A. Newell 1, ne ne se 20-24s-11w	*	4085
Atlantic-Phillips, Lyons 1, ce½ e½ ne 28-24s-13w	2039	4079
STEVENS COUNTY—		
Panhandle-Eastern, Newby 1, center ne¼ 27-31s-37w (pb 2650)	¶2	2850
Cavner 1, center sw¼ 33-31s-38w.	¶9	2800
WOODSON COUNTY—		
Mossman & Ashlock, Dreyer 1, se sw se 25-23s-13e	*	1735
Sheedy, Lee 7, se sw sw ne 28-25s-14e	20	1474

*Failures; †Junked; ¶Million cu. ft. gas.

OKLAHOMA
Completions
(Week Ending February 19)

Company, Well and Location	Init. Prod. Bbls.	Depth
CARTER COUNTY—		
Samedan Oil Co., Higgins R-C 20, se ne sw 6-2s-2w	¶20	2076
A. C. Higgins 18, se se nw 7-2s-2w	35	2525
W. W. Woodworth, Fee 3, nw ne nw 20-4s-2w	*	1531
Sinclair Prairie, Richards 17A, ne sw ne 9-4s-3w (pb 1025)	3	1123
CREEK COUNTY—		
March Oil, Lee 18, sw sw se se 13-18n-11e	8	1525
Lease Investment Co., Brooks 1, nw sw sw 36-15n-10e	156	2530
Feierson & Kirchner, Cooper 1, sw nw sw 26-14n-10e	126	3247
GRANT COUNTY—		
Magnolia, J. L. Reynolds 1, ne ne se 19-25n-5w	*	6233
HASKELL COUNTY—		
Continental, Ferguson 1, sw se ne 33-8n-20e	*	7003
HUGHES COUNTY—		
Champlin, Harjo 1, nw nw sw 34-9n-9e	*	3369
JEFFERSON COUNTY—		
Bridwell-Continental, W. D. Seay "A" 14, sw nw nw ne 10-7s-5w	3	1266
W. D. Seay "A" 16, nw nw ne 10-7s-5w	14	1261
MUSKOGEE COUNTY—		
Wallice, Bumpus 1, sw sw se ne 17-14n-16e	5	1586
OKFUSKEE COUNTY—		
Stekoll, Likowski 2-A, sw sw se nw 23-11n-11e	4	1640
Mid-Continent 1, sw ne sw 10-13n-10e	105	3431
OSAGE COUNTY—		
North Avant Unit, 42, ne ne nw ne 31-24n-12e (otd 1738)	4	1757
PONTOTOC COUNTY—		
Magnolia, Norris 7, sw ne ne 21-2n-7e	1194	3954
Magnolia, Metro Life Ins. 38, swc sw se se 22-2n-7e	77	2605
Moore, Ingram 2, sw ne ne 22-2n-7e (otd 3898)	14	3946
Blackstack, Hardin 3-A, sw se nw 30-2n-7e (pb 2999)	155	3646
F. Newsom, Walker 3, nw sw nw sw 11-4n-6e	25	1174
Dutton & Jones, Abbott 1-A, nw nw ne 14-4n-6e	*	1220
Lake, Summers 1, sw nw sw 25-5n-4e	696	2573
Barbara, Mount 2, nw ne nw 36-5n-7e	96	2316
SEMINOLE COUNTY—		
Evans et al, Swan 1, sw nw se 33-7n-6e	186	2925
Malernee et al, Swan 2, sw ne sw 33-7n-6e (pb 2916)	120	2921
Sinclair Prairie, Cully 1, sw nw nw 13-5n-7e (pb 4227)	83	4392
Gulf, Denmark 3, ne sw se 11-7n-6e	1955	4242
Francis, Lewis 1, ne se se 32-7n-6e (pb 2906)	505	2936
J. F. Smith, Norvell 3, ne se ne 32-7n-6e	550	2970
STEPHENS COUNTY—		
Carl Carter, Warden "C" 3, sw sw nw ne 34-1s-5w	12	723

*Failures; †Junked; ¶Million cu. ft. gas.

Compressors

Pennsylvania Pump & Compressor Company, Easton, Pennsylvania, recently published Bulletin No. 180, describing its various types of air and gas compressors.

Indicating Controller

American Schaeffer & Budenberg Division, Consolidated Ashcroft Hancock Company, Bridgeport, Connecticut, recently published Catalog No. 2300 describing in detail its wide range indicating controller.

GEOPHYSICAL SOIL SURVEYS

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NEW PRODUCTS FOR THE FIELD
Machinery • Tools • Equipment

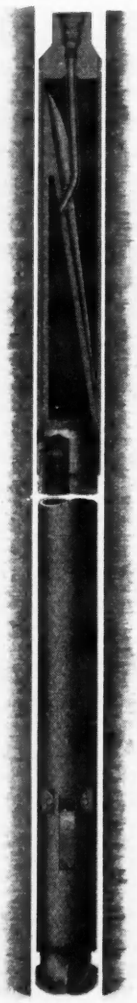
BRIDGING WHIPSTOCK PLUG
Oil Well Engineering Company

Oil Well Engineering Company, Box 2122, Houston, has on the market a bridging whipstock plug, a ready-made sidetracking plug for sidetracking and directional drilling operations. The plug consists of three parts which are made up together and run in the hole as an integral unit. The hydraulic bridger on the lower end of the tool carries three hardened steel pawls, or fingers, spaced equally about the circumference. When the plug is set at the desired level, a steel ball is dropped from the surface to seat in a valve cage within the body of the bridger and divert pump pressure through the perforated mud tube to a floating piston which rises to contact the curved inner surfaces of the pawls and force their sharpened points into contact with the walls of the hole. The spacing sections are merely joints of casing which are used to separate the whipstock a sufficient distance above the bridger to insure enough deflection away from the old hole by the time the bottom of the plug is reached to avoid the possibility of the sidetracked hole running back into the old hole.

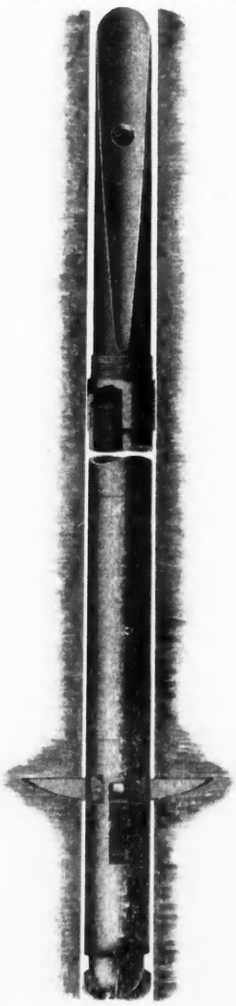
The whipstock screws into the top spacing section. A hole is drilled in the concave face of the whipstock to receive the steel ball and guide it to the valve cage. A special safety thread is provided at the lower end of the whipstock to accommodate the setting tool which fits over and around the whipstock. This special thread is provided to prevent the setting tool making up on the whipstock under the torque of the drilling in event it becomes necessary to drill the assembly through a bridge. A J-tool connection between the setting tool and whipstock will be provided if desired. A bit is provided on the lower end of the assembly to permit drilling through bridges.

Once the pawls are extended horizontally the bridger will support the full weight of the drill pipe and downward motion is halted. Rotating the drill pipe slowly to the left disengages the whipstock from the setting tool and sidetracking operations are begun on the next trip.

Features claimed by the manufacturer: No delays or waiting for cement to harden; more economical than cement plug; no loss of drilling mud due to cement contamination; circulation available at bottom of plug while running; no accidental setting possible; can be removed from hole after set; canvas packer can be used below bridger to effect a seal off bottom if desired; always a plug of known hardness; with special footpieces can be set directly on top of twist-offs; can be oriented into hole and whipstock faced in desired direction.



Bridging Whipstock in position to be set, with setting tool attached.

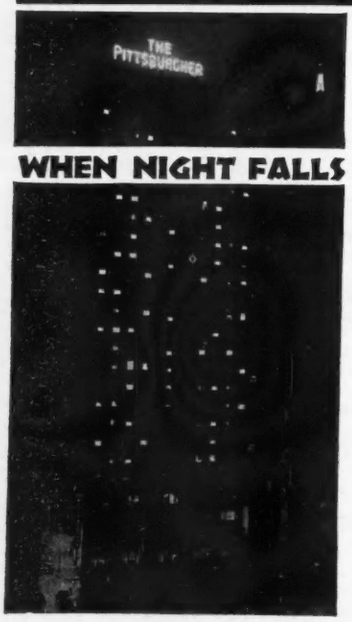


Bridging Whipstock set with the pawls firmly embedded in the formation, ready for sidetracking.

AIR CIRCUIT BREAKER
Westinghouse Electric & Manufacturing Company

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pennsylvania, recently developed a new heavy duty d-c air circuit breaker, which represents a wide departture from previous practice in circuit breakers of this type. No carbon is used and the main and auxiliary contacts are so arranged that magnetic reaction at high currents increases contact pressure.

The main contacts have the stationary portions semi-



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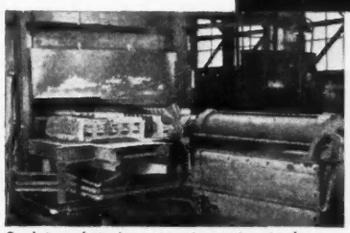
LIFE BEGINS for pump liners

IN AXELSON'S FOUNDRY CONTINUES FOR MANY YEARS IN PRODUCING WELLS

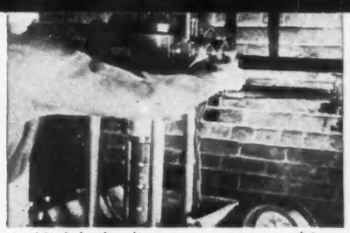
Out of the 103 different manufacturing operations and inspections necessary to the production of finished Axelson Liners these views have been selected to illustrate definite factors. First, these candid views are indicative of complete engineering and manufacturing facilities—second, they express Axelson's painstaking attention to details—third, they exemplify the metallurgical research, the laboratory control and the constant testing carried on as a part of all Axelson Liner manufacturing.

Axelson Liner processes shown are on the regular cast iron only, but Axelson Liners are also available in hardened cast iron, Super-cast iron, Nitri-cast iron and hardened steel Super-Service types. In each will be found design, construction and metallurgical features that make Axelson Liners the oil industry's best buy.

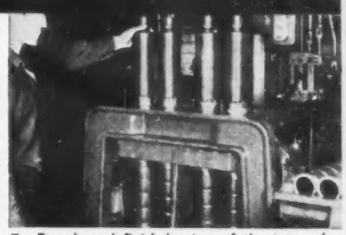
1. Sand molds for liner castings are produced from accurate patterns. Prior to actual pouring operations the previously made cores are placed in the liner molds.



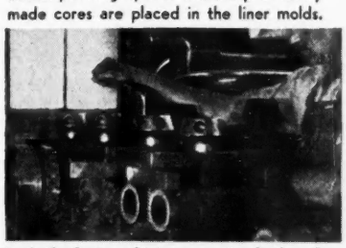
2. Internal strains set up in casting Axelson liners are relieved by a normalizing treatment involving the placing of the castings in automatically controlled electric furnaces.



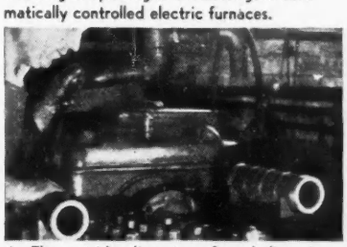
6. High hydraulic pressures are used in testing Axelson liners for any possible porosity. This equipment is designed and built to Axelson specifications.



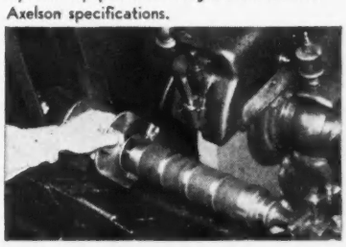
7. Rough and finish honing of the internal surface of Axelson liners produces not only a high polish but establishes a definite size to A. P. I. specifications.



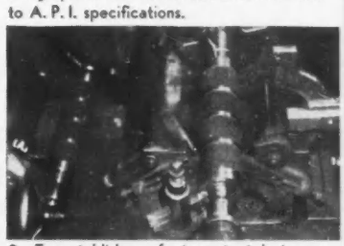
3. In the first machining operation both end faces of Axelson liners are milled simultaneously in specially tooled duplex milling machines.



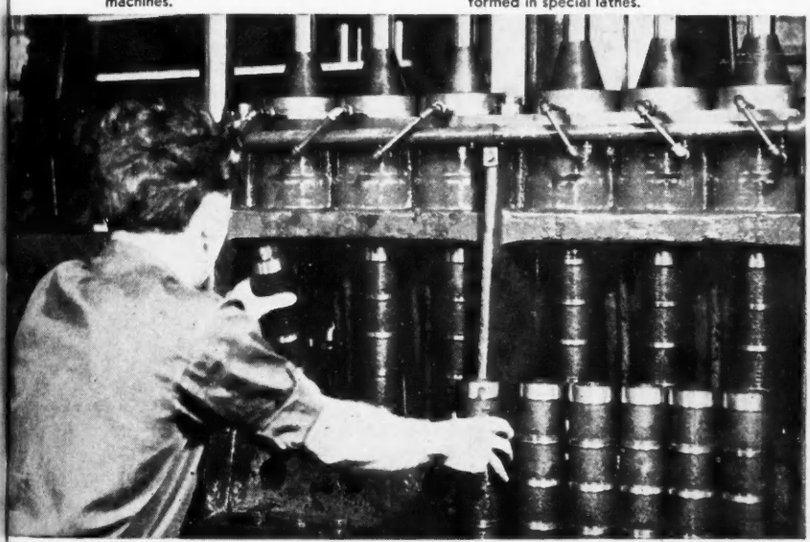
4. The outside diameter of each liner is machined to a predetermined size for subsequent grinding. This operation is performed in special lathes.



8. The previously turned outside diameter of each liner is now ground to finished size and predetermined tolerances.

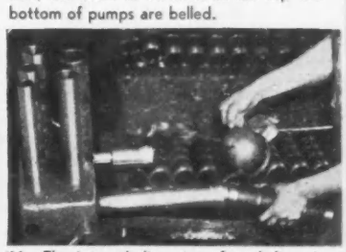


9. To establish perfect contact between liners, both ends are faced in lathes. In addition, the liners to be used at the top and bottom of pumps are belled.

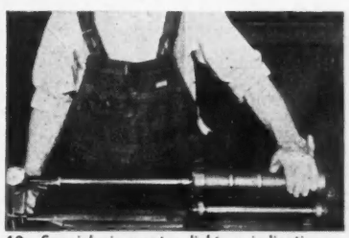


5. The internal machining of Axelson liners involves, among others, rough, semi-finish and finish boring operations. For this work special fixtures are used to insure maximum accuracy.

10. The corners between bore and end faces are slightly rounded to avoid sharp edges on the finished liners.

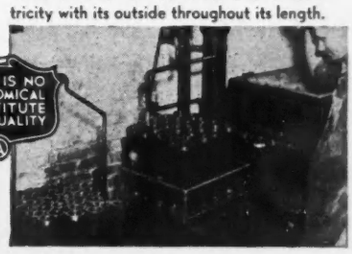


11. The internal diameter of each liner is checked with "Go" and "No Go" gauges to verify correctness of machine operations. Visual inspection is made on inside surfaces.



12. Special micrometer dial type indicating gauges are used for checking the entire inside surface for roundness and concentricity with its outside throughout its length.

13. End faces are checked for smoothness with thumb and squareness by using a straight edge in conjunction with a specially lighted background.



14. The liners are cleaned in vapor-type de-greasing equipment and are immersion-coated with a rust-preventive solution.

15. Liners are either boxed for immediate shipment or placed in indexed storage for ultimate pump assembly.

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flexible while the moving contact is solid. Thus any magnetic reaction set up by heavy currents forces the stationary contacts outward against the moving contact thereby maintaining contact pressure until the breaker actually starts to open. Similar action takes place on the secondary and tertiary contacts.

The various parts such as frame, contact arm, goggle levers, etc., are made unusually strong so as to withstand the huge forces set up by currents of the order of several hundred thousand amperes. The mechanism is mechanically trip free from the closing solenoid or operating handle so that the breaker will open immediately if an attempt is made to close it against an extreme overload or short circuit. Particular attention has been paid to the use of special materials and finish so as to obtain the maximum possible resistance to corrosion. The main contacts are silver plated and tungsten compositions are used for the arcing tips.

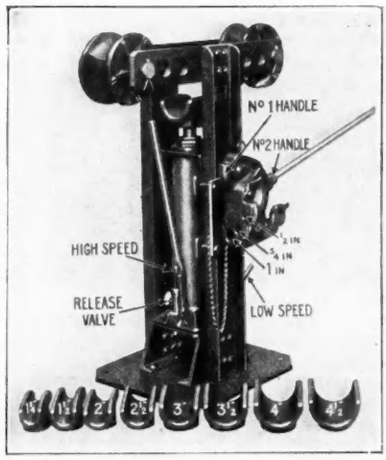
Single pole circuit breakers are available in either pedestal or panel mounted types in current ratings 2000 to 10,000 amperes up to 750 volts d-c.

PIPE BENDER AND STRAIGHTENER

Gustave Lidseen, Inc.

Gustave Lidseen, Inc., 832 South Central Avenue, Chicago, announces an improved hydraulic pipe bender and straightener designed to handle pipe in all sizes from 1½ to 4½ inches in diameter.

Comparatively light in weight for its 30-ton capacity, the bender is easily portable. A time saving and greater ease of operation is effected with rollers of a special new type which are adjustable and will handle 8 sizes of pipe without change of rollers. Fast in operation, the unit straightens or bends cold pipe to all necessary angles economically and safely. The smaller Lidseen hand benders for pipe of ½ to 1½ inches diameter may be attached to the hydraulic model as shown in the illustration. The portable hand bender can also be supplied to bend light wall tubing as well as rigid or standard pipe.



Lidseen hydraulic pipe bender and straightener.

STARTING AND BRAKING CONTROL

Westinghouse Electric & Manufacturing Company

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pennsylvania, announces a new three breaker combination containing forward, reverse and braking oil circuit breakers. Each breaker is electrically operated with an independent solenoid mechanism. The forward and reverse breakers are arranged to close their contacts when the solenoid is energized, while the braking breaker contacts are opened when the solenoid is energized. The brake contacts are spring closed when the mechanism is tripped, this being accomplished by a mechanical cross trip from either one of the other two breakers.

All three breakers are both electrically and mechanically interlocked, so that neither the forward or reverse breaker can be closed unless the brake contacts are open, the forward and reverse breakers cannot be closed together, the braking contacts cannot be closed while either the forward or reverse breakers are closed, and neither the forward or reverse breakers can be tripped open without closing the contacts of the braking breaker.

The breakers are 25,000 kv-a. rupturing capacity, 7500 volts, 600 amperes, with silver to silver contacts, "De-ion" interrupters, Micarta bushings and enclosed construction. The three breakers, mechanism, spring closing device and mechanical interlocks are all mounted on a single rigid steel plate assuring proper alignment and correct adjustment.

The time for energizing the trip coil on either the forward or reverse breakers until the brake contacts make is .125 seconds.

This Week with the Industry's EQUIPMENT SUPPLIERS

Jones & Laughlin Engineer's Institute Holds Meeting

Jones & Laughlin Aliquippa Engineer's Institute of the Jones & Laughlin Steel Corporation, Pittsburgh, recently held a meeting in which recent developments in prospecting, new methods and equipment, production and transportation of crude oil, new processes for refining oil, and new research and testing methods for oil qualities were discussed. This informal discussion was led by Dr. Paul Foote, executive vice president of Gulf Research and Development Company.

Dr. Foote illustrated his talk with lantern slides and moving pictures, showing the great variety of highly technical and costly equipment carried into the fields to determine the location of oil pools, and the great batteries of testing machinery in the many refineries and testing laboratories maintained by Gulf Oil Corporation throughout the United States. Scenes from experimental camps in East Texas, Louisiana, Oklahoma, Michigan, California, Arabia, and the camp in the Gulf of Mexico showed the crews of men at work in the field.

The Jones & Laughlin Aliquippa Engineer's Institute is a mutual organization of engineers, metallurgists and technical men employed in the Pittsburgh and Aliquippa Works of the Jones & Lauglin Steel Corporation.

Southwestern Paint & Chemical Company Expands Dallas Plant

Southwestern Paint & Chemical Company, formerly American Paint & Supply Company, Dallas, Texas, recently announced the expansion of its plant and offices.

The plant occupies a four-acre tract in the 2800 block, North Haskell, where a new office building will be erected and a retail store opened. Several new products will be added and special attention will be given protective paints especially adaptable to the oil industry.

J. B. H. Henderson is president of the new company, assisted by Fred M. Lege III, vice president; Thomas A. Carpenter, vice president and general counsel; Dr. Wilfred J. Allison, vice president; Al H. Reed, secretary, and Shirley Lege Carpenter, treasurer.

Henderson, a graduate engineer of Rice Institute, Houston, has been active in both the oil and oil supply business. He is president of Hegralle Oil Company and Oleander Petroleum Company.

J. B. H. HENDERSON
President of Southwestern Paint & Chemical Company

Polk at Wichita Falls for Well Equipment Company

Well Equipment Manufacturing Corporation, Houston, announces the appointment of C. A. Polk as sales representative in the Wichita Falls district, located at 1909 Victory Street, Wichita Falls. Polk is a product of the Oklahoma University school of petroleum engineering, and spent several years working the Gulf Coast territory for Speed & Service Iron Works.

International Supply Company Establishes New Store

International Supply Company, Tulsa, recently established a new store at Kemp City, Texas, in the heart of the K-M-A field. At the same time the company's Ada, Oklahoma, store has been moved to Fittstown. The new Kemp City store is 13 miles south of Electra and 22 miles southwest of Wichita Falls.

Phone and motor freight service is available to Kemp City, while for the present telegrams and mail for this new establishment will be handled at Electra. The Fittstown store has phone service, while mail and telegrams will be handled through Ada.

P. J. Ryan is manager of the Kemp City store, and M. L. Creed, who was in charge of the Ada branch, is transferred to Fittstown as manager.

Leon A. Watts Promoted by Allis-Chalmers

Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, announces the appointment of Leon A. Watts as general superintendent of the company's service and erecting department, succeeding the late Samuel Moore.

Watts joined the company in 1903 and during his many years of shop and field service experience has handled practically every line of equipment built by that organization. In 1924 he was stationed at Atlanta, Georgia, after having been appointed district superintendent of service and erection for the Southeast. In 1935 he was transferred to Mil-

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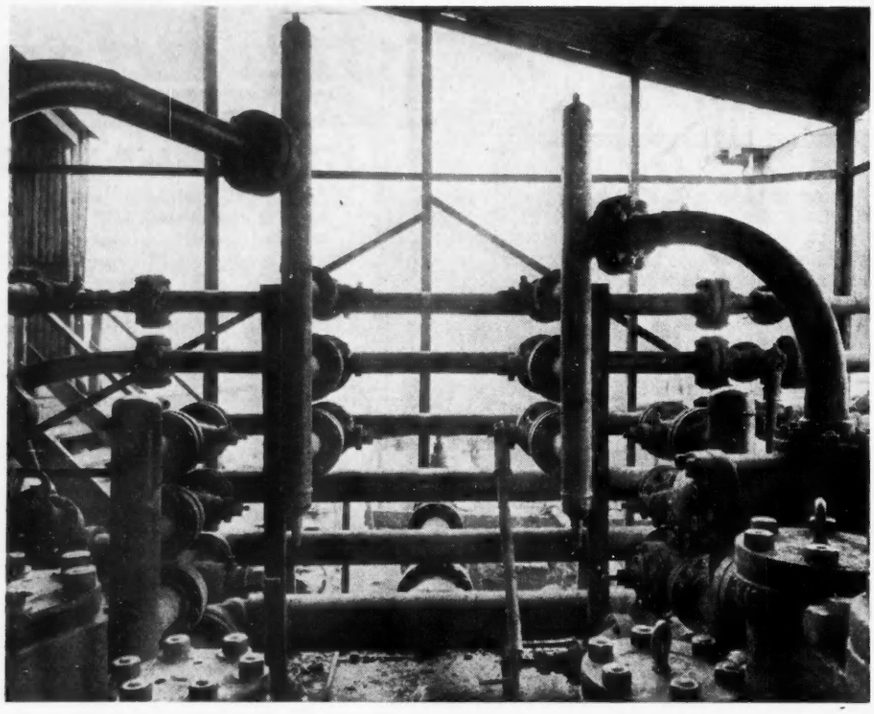
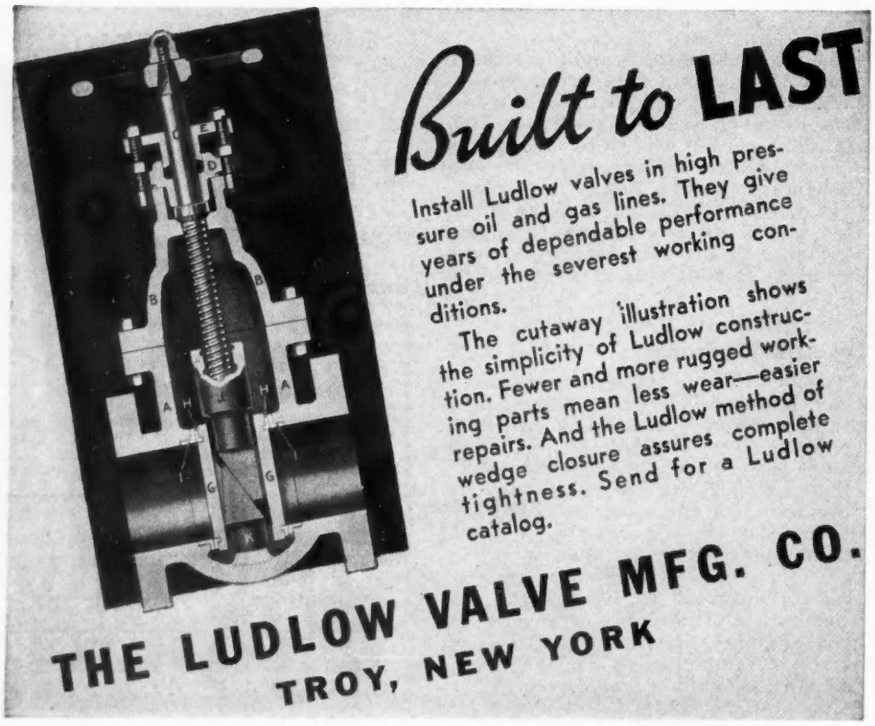


World's Deepest Well is operated with this mud manifold. Photo taken at Continental Oil Company's K.C.L. A-2 well at Wasco, California, now drilling deeper than 13,100 feet. Most of the valves are flanged. Nordstrom Hypreseal Valves are used throughout the manifold. On the discharge line, 3- and 4-inch plug valves are used. The bleeder valves are 2-inch Series 600. The suction line has an 8-inch valve. The drilling-through valve is a round-opening 7-inch Hypreseal suitable for 8⅝-inch casing.

waukee as assistant to Moore, whom he now succeeds.

Watts was born in Southwest Texas. He attended the public schools at Austin, took special military training and later served time aboard ship in the mechanical and electrical branch of the service. For several years he gained operating experience in connection with steam and hydro-plants in various parts of the country. In 1906, several years after Bullock Electric Manufacturing Company of Cincinnati (now Norwood Works) was absorbed by Allis-Chalmers, Watts was transferred to the company's West-Allis works where he engaged in a variety of electrical assembly, winding, test-room and field work. In 1911 he entered the hydraulic turbine erecting field and during a period of years supervised the erecting of some of the largest hydro-electric plants both in the United States and Japan. Various phases of his work have carried him into every state of the union and to many foreign countries.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Theo. F. Felds Promoted by E. D. Bullard Company

E. D. Bullard Company, 275 Eighth Street, San Francisco, announces the promotion of Theo. F. Felds, for the past five years representative of the company's Houston territory, to district manager. His new territory includes Texas, Oklahoma, and Louisiana.

Felds is an accredited first aid instructor both by the American Red Cross and the United States Bureau of Mines. He will continue to make his headquarters at 1 Main Street.

E. B. Bain, an experienced industrial safety man, has been added to the Houston organization.

Well Equipment Company Changes Corporate Name

Well Equipment Company recently changed its name to Well Equipment Manufacturing Corporation. The offices of the company will remain at 2023 Semmes Street, Houston.

Patterson-Ballagh Corporation Houston Manager Visits Plant

J. M. O'Melveny, Mid-Continent manager for Patterson-Ballagh Corporation, has returned to his headquarters at Houston following a two-weeks visit to the company's plant at Los Angeles.

R. A. Brewer District Manager For Continental in West Texas

Appointment of Ross Brewer as district manager of the West Texas and New Mexico district of The Continental Supply Company was announced this week at the company's home office in Dallas, Texas.

R. A. BREWER
In West Texas for Continental

Brewer, whose entry into the supply business began with The Continental Supply Company in Oklahoma during 1919, has a wide acquaintance with Mid-Continent oil men. He has served as assistant district manager since 1930, and will continue to make his headquarters in Fort Worth.

Squeaks from the Bull Wheel

As Is Usual

"So you went after the job. I thought you believed that the office should seek the man."

"I do, but this is a fat job, and I was afraid it might get winded before it reached me."

Always Running

"My father was a great western politician in his day."

"What did he run for?"

"The border."

Some Kindness

"Did you know that that feller who is runnin' for office has a glass eye?"

"No; can you tell which one it is?"

"Yes. You look at both his eyes pretty hard, and the one that has a gleam of human kindness in it is the glass one."

Cheap Talk

"Your political antagonist is calling you every name he can think of," said the agitated friend.

"Don't interrupt him," answered Senator Sorghum. "It is better to have a man searching the dictionary for epithets than going after your record for facts."

Economist

The banker politician summed up his candidacy speech with these words: "The secret of success is this. Can you earn money and can you save it?"

A shabbily-dressed man arose from the rear of the audience and proudly held out a dollar bill. "I can, sir," he shouted proudly. "This is the dollar I got when I voted for you a year ago."

Dope Was Wrong

"I suppose, Uncle Jim, you remember a good deal about the politics of the early days?"

"Well, I never tuk much int'rest in pollytics, but I kin recollect when John C. Fremont was 'lected President."

"Fremont! Why, Fremont was never elected."

"He wun't? Well, now, thet gets me. I heerd a leadin' speaker talk the night 'fore 'lection, an' he said if John C. Fremont wun't 'lected the country would fall to ruin an' everybody would have to shut up shop. Course I didn't take the papers; but, noticin' thet things went on 'bout same as before, I calculated John won. So he wun't 'lected? Well, b'jinks! Thet gits me!"

Masquerade

"Hullo, dad. How do you like my costume? I'm a salad."

"It's nice, my dear. But haven't you forgotten the dressing?"

Base Insult

"Now, Mrs. Murphy, will you tell the jury why you assaulted this gas man?"

"Sure, yer honor, an' had reason to. Didn't he call me an occupant? No silf respectin woman wud stand for bein' called such a name, yer honor."

They Understand It

"Do Englishmen use American slang?"

"Some of them do. Why?"

"My daughter is being married in London, and the duke just cabled me to come across."

Not Behind

A man was applying for relief and the young lady official was filling out the customary form.

"Do you owe any back house rent?" she asked.

"I should say not," he replied. "We have modern plumbing."

Bum Voyage

"Darling, you aren't sick, are you?"

"Not exactly, but I would hate to yawn."

Bas-Relief

The nudists were planning a masquerade, and the ladies were worrying over what to imitate. "Well," said one, "with my varicose veins I think I'll go as a road map."

Not So Comfortable

"Was your old man in comfortable circumstances when he died?"

"No; 'e was 'alfway under a train."

Half and Half

"Where you been?"

"Having my hair cut."

"You know you can't have your hair cut in company's time."

"Well it grew in company's time, didn't it?"

"Not all of it."

"Well, I ain't had all of it cut off."

One of the 57

"Please give me Mr. Dill's telephone number."

"Is the initial B as in Bill?"

"No, it's Dill as in pickle."

Can't Go

"What color dress will you wear to the ball?"

"We're supposed to wear something to match our boy-friend's hair, so I'll wear black. What will you wear?"

"I don't think I'll go. My boy-friend's bald."

Instinct

"I was out with a drunken driver last night and he headed right for a telephone pole."

"The dog!"

Getting Even

"Don't you think it's running too fast? Look out, you'll sew the wrong seam. Slow down or you'll stick that needle in your finger!"

"Why, what's the matter with you? I've been running this machine for 10 years."

"Oh, I was merely trying to assist you, just as you try to help me drive the car."

PRACTICAL PETROLEUM ENGINEERS' HANDBOOK

By JOSEPH ZABA, E. M. M. Sc.
Petroleum Engineer, Rio Bravo Oil Company
and
W. T. DOHERTY
Division Superintendent, Humble Oil & Refining Company

For a number of years there has been a growing demand for a handbook containing formulae and other practical information for the benefit of the man working in the production and drilling branches of the oil industry. So great has been this need that many engineers have tried to accumulate their own handbooks by clipping tables, formulae and figures from scores of sources.

The co-authors of this volume discovered by coincidence that each had been for a period of several years accumulating practical data which through their collaboration appears in this book. Both of them are men who have not only received theoretical training but who have had many years of practical experience as engineers in dealing with every day oil field drilling and production problems.

As a result of this collaboration of effort the publishers of this volume feel that it is a most valuable contribution to oil trade literature.

Its purposes are distinctly practical. The tables, formulae, and figures shown are practical rather than theoretical in nature. It should save the time of many a busy operator, engineer, superintendent, and foreman.

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